NOVEMBER 1930

PENCIL POINTS

A JOURNAL FOR THE DRAFTING ROOM

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The Sawed Stone Exterior gains quick acceptance

Beauty of wall surface at moderate cost is leading more and more homebuilders to become interested in Ilco Riplstone. Ilco Riplstone is Indiana Limestone of selected colors, textures and sizes, prepared for use as a sawed masonry facing.

Satisfactory results are assured when you specify stone from the quarries of Indiana Limestone Company. Every piece of Ilco Riplstone is "hand picked" so as to conform to your design. You cannot build of local stone with such a minimum of preparation cost, nor with such assurance of success.

The Ilco Riplstone wall surface has a variety of color-tones which will give your design the note of distinction you have been looking for. The many beautiful houses already built of this stone show what can be done. Your talent devoted to designs suitable for limestone will result in more fine houses. Why not plan to use Ilco Riplstone in your next house project? We will give you every possible assistance. Your client will pay only 5% to 6% more than the same house would cost with some other facing material. Send today for our literature.

Box 2184, Service Bureau, Indiana Limestone Company, Bedford, Indiana. Please send literature regarding Ilco Riplstone.

Signed

Street

City: State:

INDIANA LIMESTONE COMPANY

General Offices: Bedford, Indiana.

Executive Offices: Tribune Tower, Chicago.
Wall Units of
Atlantic Terra Cotta
Particularly Adapted for Interiors
= Catalog on Request =

An entirely new development—Atlantic Wall Units have every advantage of handmade Terra Cotta.

Great economy is due to the fact that Wall Units are made mechanically to standard size, with every saving attending on quantity production. Quick and easy to erect, there is great saving in labor costs.

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The entire line of Atlantic colors, hundreds in number, is open for selection.

Atlantic Wall Units are particularly useful for lining lobbies and corridors in office buildings, schools and hospitals, replacing less durable materials or materials that are far more expensive. Atlantic Wall Units complete the walls structurally and give a permanently enduring surface, clean and sanitary, that can be completely renovated at any time by washing with soap and water.

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Power house interiors, dairies, bakeries and food product factories require maximum light reflection and the cleanliness of Terra Cotta Wall Units.

Atlantic Wall Units are manufactured in an entirely new way. The development is one of the greatest importance to architects, owners and builders.

In writing for catalog please specify "Wall Units."

Atlantic Terra Cotta Company
19 West 44th Street, New York

Atlanta Terra Cotta Company
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Gauging . . . Accuracy is the Watchword

A Jenkins Valve is machined to a standard of accuracy that permits complete interchangeability. Continual, systematic gauging assures perfect fit of every part. The assembled valve is a strong, leak-tight unit that gives long-term performance...Jenkins valves are made in standard, medium and extra heavy patterns for practically every valve requirement. Jenkins Bros., 80 White St., New York; 524 Atlantic Ave., Boston; 133 No. 7th St., Philadelphia; 646 Washington Blvd., Chicago; 1121 No. San Jacinto, Houston, Texas; Jenkins Bros., Ltd., Montreal, London.
BUILDINGS have voices. Some are harsh voices that shout and scream. Voices that ceaselessly call, "Don’t think . . . hurry, hurry, hurry!" Voices that distract the men who work within their walls.

But here and there you find a quiet, friendly building that hardly whispers. It never, never repeats what is spoken within its walls. Even when people fairly swarm through the corridors you barely hear the building’s voice. And then it only says, “Hush . . . we must have no noise here.” For the architect planned more than beautiful lines. He gave his building the quiet that men seek in forest and field.

Armstrong’s Corkoustic — strong, resilient panels of cork — applied directly to walls and ceilings, absorbs sound. Echoes and reverberations and other air-borne sounds that abound in offices, schools, hospitals, auditoriums, are hushed.

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Armstrong’s Corkoustic also functions as an efficient heat insulator. The pure cork prevents the transmission of heat through walls and ceilings. Comfortable temperatures are easier to maintain. Fuel bills are lower, too. For further facts about Corkoustic, send for the book, “Acoustical Correction.” If you have a special problem our engineers will be pleased to consult with you. Armstrong Cork and Insulation Company, 902 Concord St., Lancaster, Penna.

Armstrong’s Corkoustic for the acoustical treatment of all buildings
45 variable factors may affect the steam consumption of any heating system... No isolated figure of "percent saving" or of "lbs. per sq. ft." can be deemed conclusive without first considering every one of these factors... We have prepared a "check-list" of these 45 variable factors to help you check your steam consumption figures and estimates... Ask for a copy, or call in a Webster steam heating specialist to discuss this vitally important subject. Write Warren Webster & Company, Camden, New Jersey.
In Memphis on Raymond Concrete Piles

THE MUTUAL LIFE ASSURANCE BLDG.
MEMPHIS, TENNESSEE.
422 STANDARD RAYMOND PILES—12,238'.
 Architects and Engineers—Boyer & Bacht.
Gen'l Cont.—Keeley Brothers.

Where foundations must be reliable—where the reputation of Architect and Engineer and the profit of the Owner depend on what supports the building—so many Architects, Engineers and Owners agree on Raymond Concrete Piles in so many cities that the evidence of their value is overwhelming.

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SLABS WEIGH AS LOW AS 10 LBS. PER SQ. FT.

Haydite aggregate with its millions of trapped air cells is used in place of sand, to make Featherweight Concrete. Haydite is burned shale — vitrified, impervious and strong.

Concrete has always provided the highest type of roof-deck available. In true permanence, fire-safety and freedom from maintenance, it has never been equaled.

Featherweight concrete goes a step further — it adds to those values a new light weight (as low as 10 lbs. per sq. ft.) and an insulating value, also new to concrete.

That the resulting economies are vital, is thoroughly proven by Featherweight’s acceptance for the buildings of leading industrials, railroads and utilities, as well as for fine public buildings. Millions of square feet are in use. "Catalog and Roof Standards" on request.

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FEDERAL CEMENT TILE COMPANY
608 South Dearborn Street Chicago
FOR OVER A QUARTER CENTURY
ONLY TIME CAN PROVE VALUE
IN WINDOW SHADES

Time has done its proving of Columbia shades

Perhaps you are choosing window shades now, from samples spread across your desk. You can compare their looks...their costs. You can't compare their values.

What will they look like six months...years from now? Will they hang straight...free from sagging? How badly will they need cleaning, and will it be costly? How smoothly and how quietly will their rollers be working? What kind of service will they be giving at your windows?

True value in window shades is cost divided by length of good service. And only time can work that out. But it needn't be your time...you need do no experimenting...if you specify Columbia shades.

Columbia is the largest maker of window shades. For many years Columbia shades have been serving well at many kinds of windows. Over and over again...time has done its proving of Columbia shades.

You can benefit by that. Call in the Columbia man. Let him help you find the Columbia shade for your needs. Let him tell you why it is your kind. Buy value in window shades, where value is already proved.
With sixty years experience building steel heating boilers Kewanee has developed the most complete line; to carry every size radiation load; in any kind of building operation.

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The Crown Sheet is Corrugated and "Right-Side-Up"

The corrugated Crown Sheet provides a greater area of heating surface directly in contact with the most intense heat in the firebox. This insures more complete absorption of the heat by the water in the boiler, and very quick steaming.

The corrugations also add strength and take care of expansion and contraction due to variations of temperatures in the firebox.

Being "Right-Side-Up" there are no pockets in which soot, mud or sediment can collect—such residue naturally falling to the bottom where it is easily washed out. This design also adds height to the combustion chamber—an essential of complete fuel-saving fuel burning.

Tapped for Excelso Water Heater. Catalog No. 84 has all the details.

Kewanee Boiler Corporation
division of American Radiator and Standard Sanitary Corporation
KEWANEE, ILLINOIS Branches in Principal Cities

MEMBER OF STEEL HEATING BOILER INSTITUTE
If you have had even a little to do with plumbing installations, especially in public and semi-public buildings, you know these ignoble three.

Their method of attack is simple. They wait until they can take advantage of human carelessness, human failings or defects and faults in the installation.

The Clow Soldier of Sanitation is your most logical ally in your constant battle against these three.

It is his job to design and construct for public and semi-public buildings as well as dwellings, plumbing fixtures that will compensate for carelessness, human failings and human uncleanliness.

To gain his end the Clow Soldier of Sanitation has developed the most complete line of specialized fixtures in the world, with particular types and designs to meet every conceivable condition in schools, hospitals, industrial plants and similar public buildings.

He has developed manufacturing safeguards to an unheard-of degree, actually putting each fixture through tests, based upon what it will meet on the job, before shipment.

And at his fingertips are 52 years of experience in working out the most acute and most difficult plumbing problems. He is your ally against plumbing Failure and its resulting repair costs—against Short Life and the resulting high replacement costs—against Insanitation and its hideous dangers. Call him in.

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CHICAGO
PREFERRED FOR EXACTING PLUMBING SINCE 1878
Consult your architect

Ask for a Copy
Clow has specialized catalog detailing special fixtures for schools, hospitals, industrial plants and similar public and semi-public buildings. Because these lines are so unusually complete you will be interested in the book. Ask for a copy today.
"A distinguished contribution to American architecture"—so considered by the jury in awarding the Gold Medal Beauty Prize to the PALMOLIVE BUILDING Chicago

BEAUTIFULLY expressive of the commercial spirit at its best, the towering and distinctive Palmolive Building captured the gold medal awarded annually in the north central district of Chicago. Soaring 37 stories above the southeast corner of Michigan Avenue and Walton Place... buttressed by an interesting series of set-backs... the main structure will terminate in a beacon light 150 feet higher.

Although individuality was a purposeful achievement, those responsible for the design and erection of the structure also exercised greatest diligence in the selection of time-tried, quality-proved materials and equipment. Particularly does this obtain in the piping, the major tonnage being NATIONAL—America's Standard Wrought Pipe

National Tube Company - Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

PALMOLIVE BUILDING, Chicago
Architect: Holabird & Root, Chicago
General Contractor: Lundoff-Bicknell Co., Chicago
Plumbing Contractor: M. J. Corboy, Chicago
Heating Contractor: Kohlby-Howlett Co., Chicago

NATIONAL PIPE
Modern Store Front Design — Possible Only with Quality Construction

A modern commercial building in Chicago, with store fronts of Brasco Monel Metal Construction. Architects Leichenko & Eisner, Chicago. Illustration at the bottom shows the details of this latest advance in store front design.

More than ever, the fine, the distinguished, the substantial, comes into its own. Today’s technique demands its proper mediums of expression—new metals, construction advantages, architectural beauty.

Brasco, in step with the times, contributes to this era, new ideas, new effects, new and greater possibilities for modern store front architecture.

Monel Metal, with its lustrous, silvery, rust-proof charm—rich Davis Solid Bronze or Extruded Aluminum—distinctive constructions in copper or bronze—all engineered for strength, safety, beauty, economy.

Samples are available, clearly marked with the gauge of each member, for actual comparison on a quality basis. Full sized details also on request.

Brasco Store Fronts may be obtained in Monel Metal - Bronze - Copper - PermaWite - Davis Solid Bronze
No known material is better adapted to Spanish architecture than terra cotta. This applies to its interior as well as exterior use. Of the two illustrations of the United States Customs House at San Juan, Porto Rico, the one at the top shows Federal Seaboard Terra Cotta in full polychrome as an exterior material. Below, an interior of the same building, the pierced terra cotta grilles and delicate tracery again reflect the architecture of Spain. In all parts of this country and in many other parts of the world there is a constantly growing list of important buildings in which Federal Seaboard Terra Cotta supplies the color and form with the maximum of economy.
Consult our experts on any problem in Architectural Acoustics

With the increasing desire to abate noise and provide better hearing conditions in all types of business, residential and public buildings, there has come a vital need for an organization which can render a complete service on all phases of architectural acoustics.

Through the creation of a variety of acoustical materials, and through the maintenance of a staff of experts, as well as competent installation crews, the United States Gypsum Company is in a position to prescribe impartially the materials best suited to the job, predict definite results and assume full responsibility for them.

Where a more comfortable noise level is desirable, Acoustone, the USG acoustical tile, is generally recommended. For creating proper hearing conditions in theatres, churches and auditoriums, and for abating noise in business offices, hospitals, restaurants, banks, schoolrooms, etc., Acoustone has been highly successful. It prevents noise disturbances by reducing the reverberation which is caused by the reflection of sound waves.

A mineral material resembling Travertine Stone and supplied in varied patterns, shapes and colors, Acoustone costs less than any stone and lends itself to any architectural or decorative scheme. It is fireproof and, when soiled, is quickly restored to its original appearance simply by vacuum cleaning.

For prevention of noise transmission from one room to another, the USG System of Sound Insulation is employed. As in the case of Acoustone, we supply the materials, supervise their installation and take full responsibility for the results.

We invite you to call upon one of our experts who will gladly counsel with you on any problem in architectural acoustics. Samples and descriptive literature sent on request. Please address the United States Gypsum Company, Dept. 28N, 300 W. Adams Street, Chicago, Illinois.
New Ventilating revolutionizes school

millions of dollars will be saved in fuel, maintenance and lowered building costs

OUT of many years of study, research, and practical experience in the field of school ventilation a new science has evolved which is the basis of a new ventilation art.

This art in many ways is contrary to past practice.

Most present and past practice has been based on the assumption that harmful and injurious effects resulted from the inhalation of respirated air. Therefore the object of most ventilation systems was to continuously flood the room with outdoor air in order to dissipate the so-called "crowd poison."

Scientists of today however, as a result of observation and practical experimentation, assert that the theory of outdoor air being the vital requirement of ventilation is unsound. They maintain that the indoor conditions essential to health, comfort and alertness are: 1. Atmospheric activity. 2. Relative humidity. 3. Control of room temperature.

The acceptance of these facts provides a basis for the new Herman Nelson System of Ventilation. This system provides to a nicety the requirements that science now prescribes. With this system instead of introducing a fixed amount of outdoor air into a room, out-of-door air is admitted only when required to control temperature and dissipate odors.

With the Herman Nelson System, proper indoor atmospheric conditions may be maintained automatically through proper air motion, humidity limitation, and temperature control. Such outdoor air as may be required for the removal of excess body heat and odors is tempered to

The HERMAN NELSON
just the right degree through inner-mixture with room air—but is not preheated.

It is estimated that the Herman Nelson System of Ventilation will save approximately half the fuel bill, for it is no longer necessary to heat the large volume of cold outside air, that in the past was admitted into the schoolroom during the winter months.

Further economies result in building construction through the use of smaller boilers, reduced pipe size, and through the elimination of vent flues.

The Her-Nel-Co Ventilator is the principal equipment used in the Herman Nelson System of Ventilation. This machine together with the required amount of direct radiation will amply serve the schoolroom.

The cabinet is finished in beautiful morocco enamel with bronzed fittings. The cabinet contains the Herman Nelson Wedge Core radiator for heating the room air which circulates through it—a fan motor for quietly forcing air circulation, a filter for cleansing air of dust and dirt, a steam jet humidifier and dampers either automatically or hand controlled for regulating the admission and intermixture of indoor and outdoor air.

While the Herman Nelson System of Ventilation is a new and radical departure from all previous schoolroom ventilation practices, it is based on fundamental scientific facts long recognized by leading hygienists and engineers. It is welcomed as the most practical solution of the school ventilating problem, for it is the most positive application of the laws which modern research has discovered.

Univent System of Ventilation

The Herman Nelson System of Ventilation is the logical development of the Univent System which has won universal recognition for its outstanding results. The Univent System meets in the simplest, most practical way, those conditions where a continuous supply of outdoor air is desired or specified by state code.

In a like manner the Herman Nelson System of Ventilation fulfills modern ventilation standards with added savings in heating installation and operation costs.

For further information, check coupon and send to The Herman Nelson Corporation, Moline, Illinois.

CORPORATION

Makers of the Herman Nelson System of Ventilation, the Univent System of Ventilation, the Herman Nelson Invisible Radiator, the Herman Nelson HiJet Heater, and other heating and ventilating equipment.
PENCIL POINTS FOR NOVEMBER, 1930

DOUBLE-WAXED LINOLEUM for
Los Angeles’ Newest Office Building

Lower Right: For the reception hall, where traffic is light, the architect specified W. & J. Sloane Contrast Marble Tile, Jr. A green marbled pattern with black marbled border was selected. Above: For the general offices, where traffic is heavier, W. & J. Sloane brown "B" Gauge Plain Linoleum was specified.

This Service Free to Architects

We maintain a service department to assist architects in planning or specifying Linoleum floors. This service is at your disposal without charge. Write for copy of Architects Data Book and ask for a representative to call if you wish advice on specific problems. Address: Architects Service Department, W. & J. Sloane, 577 Fifth Avenue, New York City.

THE Eastern Outfitting Co. Building in Los Angeles adds another name to the imposing list of buildings whose floors are covered with W. & J. Sloane Linoleum.

W. & J. Sloane Linoleum is being increasingly specified for all types of buildings, not only because the distinctive patterns and colors enable the architect to create floors of real individuality but also because W. & J. Sloane Linoleum is double-waxed at the plant.

Double-waxing means that the linoleum can be used as soon as laid—an important consideration where immediate occupancy is desired. Double-waxing also brings out and preserves the beauty of patterns and adds to the ease of cleaning.

When you specify W. & J. Sloane Linoleum, you assure your clients of the finest money can buy. Examine this superfine finish before you write the specifications. We will gladly send you quality samples.

W. & J. SLOANE
DOUBLE-WAXED LINOLEUM
AN ACOUSTIC INSTALLATION
MASTORY VAULTED CEILING (SUPPORTING ROOF) WITH ACOUSTIC TILE SOFFIT
AND CERAMIC DECORATION IN FOURTEEN DIFFERENT COLORS AND GOLD

CONSTRUCTED AND MANUFACTURED BY
R. GUASTAVINO COMPANY
40 COURT STREET, BOSTON, MASS. 225 WEST 34th STREET, NEW YORK, N. Y.
R. GUASTAVINO CO. OF CANADA, LTD., New Birks Building, Montreal, P. Q.
A slate roof is the logical choice for the half-timbered house in the English style. To secure perfect harmony, however, the roof must be especially designed. Where Tudor Stone is specified our Architects' Service Department co-operates with the building architect in this important detail.
The Shedd Aquarium in Chicago, marble monument to the most comprehensive collection of aquatic life ever exhibited, presents one of the most unusual Josam drain installations. In addition to the numerous regular floor and roof drain requirements Josam engineers solved the many difficult drain, supply and overflow problems occasioned by the use of thousands of gallons of running water of varied temperatures and kinds. The result of months of study exemplified by this unique structure is a fitting tribute to diversified drain engineering.

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Factory: Michigan City, Indiana
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Catalog G shows the complete Josam line: Josam Drains for Floors, Roofs, Showers, Urinals, Garages and Hospitals; Josam Swimming Pool Equipment; Josam-Marsh Grease, Plaster, Dental and Surgical, Sediment and Hair Interceptors; Josam-Gruver Floor-Fed, Gas-Fired Garbage and Rabish Incinerators; Josam Open Seat Back Water-Seal Valves; Josam Open Seat Swing Check Valves; Josam Adjustable Closet Outlet Connections and Bends, Water and Gas-Tight.

Josam products are sold by all plumbing & heating supply jobbers

There are no substitutes for Josam products
WHEN a combination of good architectural design, high-grade workmanship and the use of first-class building materials produces such beautiful and outstanding structures as the Northern Life Tower, illustrated above, why run the risk of obtaining results which are not pleasing?

Many similar structures are marred by the presence of staining or efflorescence on the exterior masonry walls. Efflorescence is caused by certain soluble salts present in masonry units and mortar materials, which salts are carried to the surface by rain water entering through leaky walls. It becomes noticeable as a white scum which forms on the exterior surface of the walls when the solution of the salts becomes supersaturated, and crystallization occurs due to evaporation of the water.

The best and surest way to prevent this undesirable appearance is to construct permanently waterproof building walls. The history of mortars, and recent authoritative tests, both show conclusively that masonry walls sufficiently waterproof to prevent efflorescence are obtained only through the use of mortars rich in lime.

Full details on this important subject will be found in our new booklet, "Mortars and Masonry." Write for your copy.

Northern Life Insurance Company
Tower, Seattle, Washington... An outstanding example of present-day architecture...Lime-cement mortar, changed in color from heather brown at bottom to cream tan at 27th floor, to conform to color grading of the brickwork... A. H. Albertson and Associates, Architects.

LIME « « For Non-Staining Masonry Walls

W H E N a combination of good architectural design, high-grade workmanship and the use of first-class building materials produces such beautiful and outstanding structures as the Northern Life Tower, illustrated above, why run the risk of obtaining results which are not pleasing?

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Full details on this important subject will be found in our new booklet, "Mortars and Masonry." Write for your copy.

NATIONAL LIME ASSOCIATION

An organization of leading lime manufacturers formed to encourage a better appreciation of the economic value of lime in all its uses.
PENCIL POINTS FOR NOVEMBER, 1930

"KOHLER FIXTURES increase confidence of prospective purchasers . . . win instantaneous approval!"

A buyer's market existed in Iowa. A surplus of homes made new building risky. The Ferguson Realty Company, progressive builders of Des Moines, undertook a survey of the housing situation, and decided to beat competition solely with better construction. Hardware, tilework, lighting, trim and decoration were of the highest quality. And Kohler installations throughout, in color! . . . Ninety-seven lots sold. Fifty-seven with built-to-order homes!

"The results were very gratifying," writes Oscar L. Powell, member of the firm. "Kohler plumbing fixtures met with instantaneous approval of prospective buyers, and speeded up rentals. We are firm in the belief that Kohler fixtures increase confidence of prospective purchasers, and add a margin of safety to speculative projects."

"During the last five years we have used Kohler fixtures exclusively, installing them on over 550 jobs, and we have never had a defective fixture, or any complaint of any kind to make. That is truly a remarkable record, and evidence of the high standards and uniformity of manufacture of the Kohler Co. . . . We prefer Kohler's pastel colors, which can be easily taken into a harmonious color scheme without increased work or worry."

"Last, but not least, we have found Kohler representatives capable to lend sound advice and ever ready to co-operate!"

Satisfaction with the bathroom usually means satisfaction with the rest of the house. Graceful in design, pleasing in color, soundly constructed, the quality of these fixtures goes straight through to all the hidden particulars that mean efficiency, safety, permanence. Remember that Kohler fixtures deserve Kohler fittings . . . Kohler Co. Founded 1873. Kohler, Wis.—Shipping Point, Sheboygan, Wis.—Branches in principal cities . . . Look for the Kohler trade-mark on each fixture and fitting.
A MONUMENT TO MODERN METHODS

In Cincinnati, on a lot that originally sold for eight dollars, a fourteen million dollar structure is rearing its 47 stories upward toward the clouds.

Embodying every advance of architectural and engineering science, this magnificent building will stand as a monument to the modern progress of America.

Playing an important part in this progress—enabling the successful development of plans—is American Steel & Wire Company Wire Fabric (the steel backbone of concrete).

Recognized as the most efficient and economical means of concrete reinforcement, this product is in general use throughout the nation. An evidence of interest on your part will bring detailed information and literature.

Wire Fabric being laid on floors of Carew Tower


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LUPTON CASEMENTS PROVIDE AUTHENTIC GOTHIC DETAIL


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where steel is fused with sincerity
TERRA COTTA STORES and STOREFRONTS enable the retailer to employ in his building the same attention-compelling qualities of COLOR and DESIGN which characterize the most successful commodities on his shelves.

TERRA COTTA STORES and STOREFRONTS is also the name of a new brochure illustrating large and small stores, (including examples of the MODERNE) which will be sent free on request. Coupon below for your convenience.

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TERRA COTTA
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Address
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for these Four Reasons

1. Because it saves your time and "plan cost." You don't have to detail locations of fixtures with reference to studding or wall construction, nor plan for headers.

2. Because Ankryras provide a sure fastening for fixtures, trim, grounds, wall radiators, etc., etc.—a fastening as strong as the wall itself and one that will not work loose.

3. Because Ankryras save time and material. No need to put in headers, hunt or respace studding and can be applied faster and cost less, and finally

4. Because they hold in any wall, hollow or solid. There are many places where nothing else will really work.

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In All Periods

Obtainable in a wide variety of splendid designs . . . carefully culled from the world's museums and from famous palaces

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Holds the Appetizing Flavor of Food for Hours

THE fresh-cooked, flavor quality of food can be retained and the food kept piping hot until served by keeping it in a Prometheus Electric Plate Warmer.

The double construction of doors and complete insulation make the Prometheus economical to operate and keep the outside cool.

The switch gives three degrees of heat. It cannot overheat. Furnished with thermostatic cut-off, when desired, to automatically shut off current if left on accidentally.

Is chromium plated and polished, with white vitreous porcelain doors that will not crack or turn yellow. Shelves can be removed for cleaning.

Heating element lasts indefinitely and can be easily and inexpensively replaced if accidentally damaged. Approved by the Underwriters.

Made in many models. Mail the coupon, or write for catalog.

Keeps Food Hot
Warms Plates
Dries Towels

PROMETHEUS Electric Plate Warmer and Towel Dryer

Without any obligation on our part, please send a copy of your Plate Warmer Catalog.

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When you put Von Duprin latches on a building, you spend a few dollars to save many.

Costing somewhat more in the beginning, the new series Von Duprins are so carefully made, so strong and so dependable that maintenance costs are negligible, even after many years of hard service. The higher first cost provides a definite saving in the end cost.

For your protection, we urge that you specify Von Duprins separately from the finishing hardware—and that you specify them by name. Thus you foster clean competition, since all reputable dealers can buy these devices at the same fair prices.

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Listed as Standard by Underwriters Laboratories
Brixment mortar is used regularly for mid-winter masonry even in the severest northern climates.

In fact, during the winter months more Brixment is sold in proportion to the volume of building construction than at any other time. Louisville Cement Company, Incorporated, Louisville, Kentucky.

Cement manufacturers since 1830

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For Masonry and Stucco
CARNEGIE BEAMS are selected for important Cincinnati project

Under construction in Cincinnati is the magnificent Carew Tower Development, combining under one roof an office building, hotel, garage and department store. The selection of Carnegie Beams to form the steel framework of this important structure is another splendid tribute to these popular sections.

Carnegie Beams merit the investigation of anyone interested in efficient and economical construction. Their advantages are not limited to major building operations, but apply to any type of construction involving the use of structural steel, regardless of size or type of architecture. Our engineers are always at your service.
THERE'S A NATIONAL HEATING SYSTEM
FOR EVERY BUILDING NEED

National Bonded Jacketed Square Boilers
Through the Arch to Efficiency

Through the hottest part of the flames the arched crown-sheet curves, providing an abundance of the prime heating surface essential to prime heating results. The flaming gases are drawn to the rear of the boiler—rise up into the two side flues—swirl along the long path to the front of the boiler—then swing back through the central flue to the smoke outlet. Every inch of the exceptionally long fire travel decreases fuel consumption, increases efficiency.

This boiler is designed to perform efficiently with all leading types of fuel; coal, coke, oil and gas. It can be converted on the ground to meet the individual requirements of the fuel selected. Engineering design scientifically coordinates every part to produce economical combustion and thoroughly satisfactory heating. The National Boiler Bond, furnished with each boiler, not only guarantees workmanship, materials, and design, BUT MOST IMPORTANT OF ALL SPECIFIES AND GUARANTEES BOILER PERFORMANCE.

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JOHNSTOWN, PENNSYLVANIA

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Good Taste and Sound Economy
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**DRINKING FOUNTAINS**

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With Automatic Stop and Gravity Lowering Device

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is perfection personified—not in beauty
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tended to preserve beautiful art, it must of
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mous sculptor and which he himself built.
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quarried and cut in France. The gates and
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Vernon Howe Bailey has for years been drawing architecture in various parts of the world and drawing it better than most architects. He has brought to the public in this country, through his travel drawings and writings, a pretty fair knowledge of both the well-traveled and more remote parts of Europe. Con-
versely he has brought to Europeans a graphic idea of changes which were taking place over here. He has brought to Europeans a graphic idea of the appearance of our American cities. A series of his large lithographic drawings of the skyscrapers of New York was exhibited widely in the great European centers and was greeted by the foreign press as the first adequate presentation there of the rapid changes which were taking place over here. He has coupled the newspaper man’s sense of what is new and interesting with the expressive powers of the artist and these, under the pressure of his exceptionally abundant energy, have enabled him to be an important factor in the education of all literate peoples concerning the world they live in. For these services he deserves our homage. It is with great pleasure that we announce for December a presentation of a group of his drawings in various media illustrating an article on his career by our old friend, Francis S. Swales. Culled from among the thousands he has turned out in his lifetime, these drawings can only suggest the extent and quality of his artistic production, but we are sure that our readers can gather some inspiration by examining them. Two of his recent water colors will be reproduced in full color with the issue.

Elmer Grey of Pasadena is known not only as an architect of outstanding ability but as a man who has always been interested in helping his draftsmen to improve themselves and advance in the profession. In our December issue he will give us some of the fruits of his experience in the form of advice and suggestions to the draftsman who wants to start out in practice for himself. A man may be made or broken at this critical stage in his career and we are sure that what Mr. Grey has to say on this very important subject will be read with care by every ambitious draftsman.

John Harbeson is back with us again after a summer in Europe and resumes in December his valuable series on “Design in Modern Architecture.” This time he will discuss Mosaic and Stained Glass as they are being used in the decoration of modern buildings. It is natural that in their desire for striking color the designers of today should seek to use these two peculiarly rich means of embellishing their architecture. The crafts themselves are fundamental and independent of period, but since mediaval days it is only within recent years that artists have cut loose from the bonds of traditional expression in glass and mosaic and have become creators rather than imitators. Mr. Harbeson will show some of the results of this liberation from archeology. We may like it and we may not, but it will be at least interesting.

W. Francklyn Paris, architect and critic, has contributed for the next issue an extremely clear-headed and sound exposition of what modernism is all about. The subject has been gone over many times since the movement started, and by all sorts of people, radicals and conservatives, but we have not seen from any pen a more dispassionate, unprejudiced analysis than that presented by Mr. Paris. To those who are certain that they have their bearings in this period of transition in design, nothing, perhaps, can be said, but we feel that most architects and designers who are interested in the philosophy of their profession will read his article and think about it.

John Taylor Arms, who is, among etchers, an almost incredible craftsman, will be represented by his plate Vezelay which has been reproduced by the Similene process for our December frontispiece. The sturdy tower of the fine old mediaval church forms the center of interest of this picture. The artist has delineated it with a thorough knowledge of its architecture as well as with his amazing ability to make the copper record detail almost molecular in scale. We hope that our readers will find opportunity some time to examine an original print from this plate to which no process of reproduction could do full justice.

Philip G. Knobloch continues to put his practical knowledge of drafting room problems at the service of our readers in the form of sound construction details and articles on specification writing. This month the construction plates show steel stairs worked up from data kindly supplied by Sexauer and Lemke of Long Island City, New York. He is now preparing some marquise detail sheets, through the courtesy of the same firm, to appear probably in December. We are still anxious for suggestions from draftsmen of other subjects they would like to see covered by Mr. Knobloch. Let us know of any problems that occur to you as needing solution.
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[Division of Commercial Instrument Corporation]
ARCHITECT. It is, briefly, that comes to us from a New York, circumstances, it behooves the profession to consider how going on in their usual way.

In view of these circumstances, it behooves the profession to consider how conditions can be bettered. We pass on herewith an interesting suggestion that comes to us from a New York architect. It is, briefly, that those offices which have work enough to keep going might help by operating on a five-day week basis, taking on enough extra draftsmen to make up the men-hours represented by the sixth day.

There are good and bad points to this suggestion, but it was presented quite honestly by its originator as an attempt to change their practice in this respect would make a little less money than they would by going on in their usual way. The draftsmen who were already employed would have their income cut down to correspond with the smaller amount of time put in on the boards. The only compensation for both of these classes would have to lie in the satisfaction of knowing that they were helping some of their fellow workers who otherwise might have to go entirely jobless.

Our friend's proposal is to be discussed in the very near future by a group of leading practitioners in New York who are alive to the seriousness of the situation, and it is possible that a number of offices may undertake to make the change. Some offices have already adopted the five-day week in order to make it possible to avoid cutting down their working force more than was absolutely necessary. The draftsmen's pay per week in these cases has been reduced, but they have the comfort of knowing that they are less likely to be dropped out entirely. The architects' percentage of overhead has gone up, but they have earned increased loyalty from their assistants. With better times will come their reward.

We would like expressions of opinion from our readers, both draftsmen and architects, as to the merits or faults of this suggestion. We would also like to have any other suggestions which might be passed along for the good of the profession in general. It is to the advantage of all concerned that the talent represented by America's architectural draftsmen, developed by years of study and apprenticeship, shall not be wasted by forcing its possessors into other fields if it can possibly be avoided. The time will come a time when every bit of this talent will be needed.

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This photograph of the Mayo Building entrance shows its outer bronze doors and vestibule screen of glass and bronze. A detail from the ornament of this screen is shown in the inset above. At the right is reproduced one of the panels from the outer door.

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PENCIL POINTS
November, 1930
SUCH IS the versatility of man that the marking off of limitations in the arts as in the sciences is fraught with danger. So often the analyst is discredited by the arrival of some genius who easily knocks down the ninepins that have been so confidently set up. In considering pen-and-ink drawing as it relates particularly to architectural rendering, it seems safe to say that its field is a wide one. Yet, as one thinks of the pen-and-ink drawings which have made most appeal, this generalization emerges: the genius of pen and ink lives in the sunlight. Sunlight is quite as necessary to his being as was flame and fire to the salamanders of the alchemists. And the providing of flame for the one was no more difficult than is the maintaining of sunlight for the other.

This is only another way, I suppose, of saying that there is, doubtless, no medium more absolute than pen and ink. And the major difficulty comes down pretty much in the end to the solving of the problem of the indication of tone or, especially, light or faint values. With pencil or wash, in lithography and etching, this difficulty may be minimized. Yet in pen-and-ink indication, the most competent of men, such as Goodhue, did not really find the secret of indicating, at least in small-scale drawings, light tones or values, irrespective of texture, which correspond to the values given us in the outdoor world. And with lesser men how often is the virility of the black ink and white paper contrasts so lost by the employment of what may best be characterized as injudicious shading.

The upshot of the attempt to solve the problem of light indeterminate values is the yielding to the temptation to follow one or two courses, the first being evasion, the second suggestion. I am not forgetting that it is possible to use pen and ink so that it borders on the technique of etching—in which a multiplicity of fine lines may work wonders. But etching has this to save it: it is always possible to obtain light tones, irrespective of the needle marks, by leaving just enough ink on the copper plate. This fortunate remedy is the birthright of those media which require printing for their fulfillment. The pen-and-ink drawing is direct: its salvation or damnation lies in the pen itself.

An excellent illustration of the old adage which advises one to bend before the storm lest he break is seen in the ancient and honored custom of evasion. This consists of the premeditated avoidance of certain subjects. Look, for example, through Griggs' drawings and note how rarely he shows trees in the middle distance. Trees in the background are treated broadly and trees in the foreground in detail—but the middle distance tree is generally absent. The second way out of the woods is that of suggestion and it is illustrated in scores of Rail-
A PEN-AND-INK STUDY BY J. I. ARNOLD OF AN ENGLISH WAYSIDE TAVERN IN THE COTSWOLD MANNER
ONE OF THE MANY FINE OLD LONG ISLAND FARMHOUSES WHICH, UNFORTUNATELY, ARE RAPIDLY DISAPPEARING
ton's drawings. A red brick wall has, it will be admitted, a most distinctive color, and, commonly, texture. Yet if, in a pen-and-ink drawing, one attempts to give a naturalistic value to this wall, the sunlight is very likely to escape and desert him altogether. To the sophisticated the way out of this unhappy situation is justified. By rendering a relatively small portion of the wall—indicating the bricks in this small section, usually forcing the scale, and leaving the rest of the wall white—it is possible to suggest the rough texture and the color value. In some of Pennell's drawings one may see a brick indication given by short broken irregular lines, and though it be perhaps more truthful it is, paradoxically, less satisfactory in the impression it gives. If one could imagine a psycho-analyst devoting an instant's time to so austere a subject as pen-and-ink drawing, he would probably say that the acceptance of these subterfuges simply goes to prove that human nature is most accommodating: we see an indication of texture and material on a portion of the picture of the wall and we graciously assume that the rest of the wall is made of the same material. If we weren't so accommodating, pen-and-ink would vanish from the world of architectural rendering.

Of course I am referring to the use of pen and ink for portraying not outline, but surfaces of light and shade, color and texture. The amazing thing about the drawings of a young and untrained child is that he represents objects practically always in outline. Yet outline is a very great abstraction and one might suppose that it would not be the bond of union between Vierge or Lepère and the untutored child. Properly speaking, as philosophers of the oldest vintage have told us, outline does not exist in nature, except as we conceive of that impalpable division between light and shade, or between this color and that. And who can say where the exact edge of a shadow is? Examined closely, it is always a blur. The explanation doubtless lies in the fact that the child's imagination is free and that the imagination of Lepère, by the grace of Fate, was unspoiled. Even with what imagination we may have, we shall, if we are attentive, be able to metamorphose the marvellously simple line drawings of Lepère into pictures which are full of color, light and shade, though the indications to guide us be of the slightest.

Perhaps it is the extreme convention to which pen-and-ink drawing is subject which is the secret of its appeal. Since it is capable of representing certain things so well, one is tempted to make it serve where it will not. And since its limitations are so patent, shall one not excuse the masters' use of legerdemain if it brings success. Railton's drawings are full of "tricks": the skillful falsification of values so that a pattern may be achieved. That pattern—a half rendered brick post falling into ruin—attracts the eye and we read into it some strong impression of reality. It is not like the brick post as we saw it—but it suggests some aspect of it. And since our impressions of reality are, according, again, to the most accomplished philosophers, discontinuous and fragmentary, this slight suggestion serves its end and makes the post a vital part of our experience.

If one may justifiably play fast and loose with values, are any rules for pen and ink possible? As in every other field there are rules:—the rules that we establish for getting another success. If one may justifyably [sic] play fast and loose with values, are any rules for pen and ink possible? As in every other field there are rules:—the rules that we establish for getting another success. If one may play fast and loose with values, are any rules for pen and ink possible? As in every other field there are rules:—the rules that we establish for getting another success.

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A SPANISH-AMERICAN BAROQUE WINDOW IN TEXAS
DETAIL, AT ORIGINAL SIZE, OF DRAWING BY J. I. ARNOLD SHOWN ON PRECEDING PAGE
THE PEN-AND-INK DRAWINGS OF JAMES IRZA ARNOLD

There is—if one may presume to Emersonize—a lesson in this. Teachers should, for the most part, be silent, and the students should do all the talking. Such a system of education would undoubtedly produce a lot of bosh—but it would not be systematized bosh. The student would attack his subject with the indirection of a child whose eyes do not focus and who lunges incontinentment, yet with certainty of purpose and uncertainty of aim, at some nearby object. Later the child will learn to use his knife like everybody else—and originality will be supplanted by convention. As a part of the social state we live by mutual submission to such limitations as proscribe eating with one's knife. However valid such conventions may be in the world of intercourse, there is no reason why they should apply to the world of art. The student should be given a pen and in response to his question, "What do I do with this?" he should be told, "Find out." God knows that he may make better drawings with the butt end of the pen than with the point.

I suspect, from what Mr. Arnold has told me, that his beginnings in pen-and-ink work were highly experimental. His first drawing was made at the age of twelve with ordinary blue ink, and it would be interesting to reproduce it here. That, however, is not possible. Having made this drawing, he experimented with it. He attempted to pass a wash over certain portions in order to obtain those light tones which are so elusive, with the result that the ink spread with the rapidity and effectiveness of the seven plagues which overran Egypt. From that time on Mr. Arnold has sought very seriously how to do pen and ink. He has attempted to interpret, in terms of his own technique, by close observation of things as they are in nature, how they may be indicated. I think he has succeeded admirably, and especially in one difficult field. His drawings of such lowly and beautiful objects as Colonial hardware and utensils impress me with the fact that he has labored conscientiously to find how to express these objects. Look, for example, at his drawing of a weather vane, shown below. It is supposed to represent metal: and one easily believes it. Such indication looks easy. Try it.

Of course, the renderer in pen and ink—or other media—in dealing with our modern civic architecture at least, meets obstacles. Men like Railton and Griggs, Chamberlain and Rosenberg, stick pretty closely to the tumble-down ruins of an ancient architecture in which walls and roofs seem always to dominate. They avoid, one may assume, just-built architecture. I hazard the doubt if one could persuade Griggs to make a drawing of one of our stepped-back skyscrapers. I hasten to forestall correction by saying that if he has made such drawings I have not seen them.

At least our modern work of this kind has not attracted Mr. Arnold. He has found a special interest in early Colonial work. Born in New York State, he attended Syracuse University, taking the course in architecture. On leaving the university in 1910, he was engaged as a draftsman for several years in various architectural offices in New York City. In 1917, after some time spent as a designer for Todhunter in New York City, he entered into business with Mr. North, this business being devoted especially to the design and fabrication of mantels and hardware, particularly of the Colonial period. In this work he has achieved the distinction which talent and hard work merit—and which they don't always get.

Have you ever noticed, in the drawings of Howard

"Coach and Four" Weathervane

STUDY FOR A WEATHER VANE

[861]
Pyle, how thoroughly he understood the use of accessories? If the drawing be one representing three 16th Century pirates in a boat, even the water barrel in the foreground is sure to be a proper 16th Century water barrel. Pyle's work is surprisingly free from the anachronisms which are so frequent in the work of many others. If the pirate chief, Blackbeard, is smoking a pipe, it is a pipe such as was used in 1725. The knowledge implied in the correct use of accessories means not only that Pyle possessed an active memory but it implies a direct contact with the accessory itself. Pyle had the 16th Century water barrel and he had the 1725 pipe in his studio. He didn't guess; he knew.

One feels that Mr. Arnold knows his Colonial detail and Colonial accessories similarly. In his drawings such as that on page 854, showing a Colonial interior, one feels instinctively that the hardware, which the drawing is designed to illustrate, is authentic. In all the charming drawings of door-latches, hinges, bolts and what not, one feels that they were drawn by someone who knows how they were fashioned and how they operated. And the result of this knowledge is the unobtrusive assurance with which the high-ights and black values are placed.

This conscientiousness runs through Mr. Arnold's drawings and is noticeable in his handling of detail throughout. In no other medium, I suppose, are the variations of technique more apparent than in pen and ink. Every drawing has the defects of its qualities. The overemphasis of the sweeping line in Railton's later drawings of foliage; the overdone and inanimate quality of some of Griggs' work; the looseness of some of Pennell's work;—these are disturbing—but not in such measure as to outweigh our gratefulness for their happier work. Such criticism is not faultfinding; it is a simple recognition of the fact that what we gather with one hand we lose with the other, all too often. To catch the sunlight may mean the losing of something else. To give the formation of the bark of an old oak it may be necessary to sacrifice something of the mystery of the tree as we behold it in nature. All drawing is analytic and every analytic process, in giving us something specific, eliminates the vague and indefinable sense of wholeness which we gain in contemplating, as it grows, even a blade of grass.
THE GEOMETRY OF ARCHITECTURAL DRAFTING

13—PLOTTING OF EXTRANEOUS ANGLES

By Ernest Irving Freese

EDITOR'S NOTE:—This article, which is copyrighted, 1930, by the author, continues the series begun in August, 1929.

ANY ANGLE demands two lines for its graphical representation. If you draw but one line on the board—a horizontal, or a vertical, or an oblique—you have not pictured an angle. If you draw a second line in any direction other than parallel with the first—and either in touch with the first or removed from it—you have pictured an angle. The two lines are its sides. The common point to which these lines converge, whether this point be on or off the board, is the vertex of the angle. Now, if you draw a circle—any circle—about this vertex, or imagine such a circle as being so drawn, then the measure of the angle is that fractional part of one complete revolution that is intercepted by the sides of the angle. However, it is not my intent to here dwell unduly upon such revolutionary measures, but just to state that a plotting Babylonian astronomer once conjured up a number that is evenly divisible by more numbers than some other numbers he thought of. It's 360. Being such a roundabout number, it just naturally put a stop to all further contemplation of a revolutionary character until, by degrees, it came to be accepted as the unchangeable standard to which all protractors and tabulated trigonometrical functions now conform. So now, since I have unquestionably gone on record as cognizant of the fact that an angular "degree" is not a measure of length but is, instead, a three-hundred-and-sixtieth part of a revolution, we can, forthwith, proceed on our geometric way equipped with the requisite mutual understanding.

If one side of an angle is given, and the other required side can be materialized solely by direct manipulation of the sliding instruments operating either singly or in combination, the resultant angle is an "inherent" one; hence, requires no angular measurement or "plotting." The full range of these angles, and the set-ups required to produce them, have hitherto been shown at Diagram "1" of Figure 109 in Part 12, where they are referred to the horizontal as a base, and at Figure 56 in Part 6, where they are referred to a given extraneous line as a base. Angles other than these are extraneous to the instruments. In other words, an "extraneous" angle is one that is not a multiple of $7\frac{1}{2}$ degrees. A few of these, as has been shown at Figure 110 in Part 12, are readily constructible with the compass. In general, however, any extraneous angle must be plotted, or laid out, by one or another of the methods in this Part presented.

Figure 115 acquaints you with some excellent protracting methods of general application in cases where the required angle contains a whole number of degrees or a fraction thereof that can be exactly obtained, or that can be accurately estimated, from the graduation marks of the instrument. Diagram "1" emphasizes the seldom-realized fact that the angle $ABD$, with vertex on the circumference, is always one half of the central angle $ACD$. Diagram "2" utilizes this advantage to procure a longer line, $BD$, than would otherwise be the case, as well as to avoid estimation of the degree which, in a protractor reading to half degrees, would otherwise become necessary. The longer base, $BA$, for alignment with the given line, also makes for greater accuracy in the placement of the protractor. It is evident that angles expressible in quarter degrees can thus be exactly laid off with a protractor graduated only to half degrees, and, similarly, that angles to eighth degrees...
According to the diagram "5", the angular indication on the protractor is twice the angle required. Hence, in all cases, place the protractor with its mark B at the vertex of the required angle instead of there placing its central point C. Then mark off from A to D, exactly twice the number of degrees required. The line DB will then make the required angle with \( BA \), as shown. Where the required angle exceeds, say, 30 degrees, some such combination as shown at Diagram "3" can be advantageously employed. Here, the "inherent" angle of 60 degrees has been subtracted from the required angle of 69 degrees, and the difference of 10 seconds, however, can be neglected without any difference becoming detectable in the resultant inclination of any line limited by a six-foot drafting-board! If a required angle calls for, say, 17 degrees, 45 minutes, 10 seconds—it can safely be laid off as 17 degrees. You will seldom find, however, even on surveys, any angle reading to less than a quarter of a minute.

The line \( CD \) of Diagram "4" becomes a perpendicular to the imaginary chord \( BD \), and can be instrumentally projected in the same manner as the line \( CD \) of Diagram "4." The only advantage this method has over the method shown at Diagram "2" is that the required line \( CE \) of Diagram "5" can be projected through the one point at the vertex, whereas, the required line \( BD \) of Diagram "2" must be projected through the two points B and D. (See Figures 55 and 53, respectively, in Part 6.) The table given in Figure 115, herewith, will undoubtedly prove of value in converting minutes and seconds into fractions of a degree for protracting or otherwise laying off a given angle. If the required angle contains any combination of minutes and seconds not found in this table, other means than the protractor should be employed to plot same. A difference of 10 seconds, however, can be neglected without any difference becoming detectable in the resultant inclination of any line limited by a six-foot drafting-board! If a required angle calls for, say, 17 degrees, 45 minutes, 10 seconds—it can safely be laid off as 17 degrees. You will seldom find, however, even on surveys, any angle reading to less than a quarter of a minute.

At Figure 116, the approved "engineering" method of plotting angles by trigonometry is given. It requires the use of readily-procurable tables of "natural trigonometrical functions." Diagram "1" is a graphical representation of the functions made use of in this.

**Figure 116**

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method—the trigonometrical “tangent,” $bc$, of the required angle, $A$; and the trigonometrical “sine,” $bd$, of half the required angle. The Diagram makes it plain that the “chord,” $bd$, of the required angle, $A$, is equal to twice the sine of half the required angle. Hence, with the aid of the aforementioned trigonometrical tables, the chord of an angle can readily be determined from that formula; though chord tables are available which obviate even this simple calculation. Diagrams “2” and “3” show two examples worked out by this system: one utilizing the “tangent,” or perpendicular $bc$, and the other utilizing the chord $bd$—the actual lengths of said tangent and chord being determined by multiplying the aforementioned tabulated ratios by the actual length of any assumed radius, $R$. The process is so clearly set forth in this Figure as to require no further explanation except, perhaps, the manner of interpolating values not given in the usual tables. These tabulated values ordinarily read to any number of minutes required, but the functions for angles containing fractions of a minute, or seconds, must be found by “interpolation.” This is invariably done by simple proportion, that is, by assuming that the arc subtended by an angle of one minute, or sixty seconds, is a straight line—certainly a practical assumption!

The general process of interpolation then becomes as follows, referring to the actual example given at Diagram “3”: Set down the tabulated functions, items 1 and 2, of the two nearest angles between which the required angle occurs. Take their difference, which is item 3. Now consider this difference as the corresponding function of 1 minute. This is pure fiction, but it clarifies the process. In other words, in the example, if this difference, which is item 3, is the sine of 1 minute, or 60 seconds, then the sine of $\frac{1}{2}$ minute, or 15 seconds, will be $\frac{1}{4}$ of item 3, which is item 4. Hence, this difference, which is the sine of 15 seconds, subtracted from item 1, will result in item 5, which result is the interpolated sine of the required angle.

The same result would have been attained by taking $45/60$ths, or $\frac{3}{4}$, of item 3 and adding it to item 2, but in this case the route chosen is the shortest. In laying off the linear values required by this method of plotting angles, the decimal scale should be used. Even so, it is clearly out of the question to lay off a distance to the number of decimal places shown. But the greater the proportionate distances used, the greater will be the accuracy of the result. For angles up to, say, 45 degrees, the “tangent” method will prove satisfactory. Beyond this, because of the length of tangent required relative to the length of radius, it is apt to become clumsy or entirely unwieldy. The method by “chords” then becomes preferable—though in this method the beam compass may have to be used to swing the necessary arcs. By means of the exponents suggested at Diagrams “4” and “5,” however, space may be saved and the big decimals made more manageable. These expeditious combination methods are fully set forth by the Diagrams referred to.

Now I am going to show you an entirely new and general method of plotting any extraneous angle whatsoever with no instruments except your three triangles and your scale. You will not need a protractor, nor any trigonometrical tables. But you will have to do a little simple preliminary arithmetic. And once you “get the hang of it”—you’ll sit up nights doing it just for fun! This method is merely a workable system of graphical interpolation, that does away with decimal measurement entirely and gets the laid off distances into integers—whole numbers. And the results are so accurate that the “theoretical” deviation is graphically non-detectable within the limits of any drafting-board ever used. Applications of this method have already been shown in Part 12, at Figure 112, in laying out the central angles of the polygons of 17, 13, 11 and 7 sides. Now refer to Figure 117, herewith. The four worked-out examples are given in full to remove all doubt as to the method of interpolation for any angle whatsoever, whether expressed as a fraction or as degrees, minutes, and seconds. The method is invariably. There are no exceptions. In the first example, at Diagram “1,” let it be required to lay out an angle of 4 degrees, 10 minutes; one side, $AB$, being given. On a convenient scratch pad, set down the required angle and reduce it to a fraction, which is 4 $\frac{1}{6}$ degrees as shown. Below this, set down the two angles nearest to 4 $\frac{1}{6}$ degrees that can be produced with the triangles. The interval between these two “inherent” angles will then be $7\frac{1}{2}$ degrees—always—and the required angle will lie somewhere between. We shall see. In this case, the two nearest inherent angles are 0 degrees and $7\frac{1}{2}$ degrees, as set down in the Diagram. Draw a line beneath these and then set down the difference between each and the given angle, resulting in the numbers 4 $1-6$ and 3 $2-6$, as shown, and maintaining the fractions to the same denominator. Now consider these two numbers, whatever they may be, not as angles, but as the terms of a proportion. Then reduce this proportion to integers. For example: 4 $1-6$ is to 3 $2-6$ as 25 is to 20—which is merely the process of determining the numerators of their purely fractional forms. But 25:20 is further reducible by the common divisor 5, resulting in the final numbers 5 and 4, as shown. Circle these numbers with your pencil, and continue the circles as crossed lines to the two inherent angles first set down above the horizontal line. These hieroglyphics are merely to remind you that the number of units at the lower end of either crossed line is to be laid off at the inherent angle indicated at the upper end of the same line, and that, from the point thus fixed, the other number of units is to be laid off at the other inherent angle—each inherent angle being referred to the given line as a base. Now let’s do it: From the given vertex $B$, on the given line $AB$, lay off any 4 units at 0 degrees to the given line—which is on it, in this case—thus fixing point $C$. From $C$, lay off 5 of the same units at $7\frac{1}{2}$ degrees to the given line, thus fixing $D$. The line $BD$ then makes the required angle with the given line $AB$. Note that the two inherent angles between which the required angle is
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Interpolated, are always referred to the given line \( AB \), and that it makes no difference at all whether one or the other is laid off first: the point \( D \), establishing the required angle \( ABD \), will always come at the same place because the required line \( BD \) is the diagonal of the parallelogram of graphical interpolation. You will readily discover this by laying off the required angle both ways from the same vertex, from which the line \( BD \) will actually be seen as this diagonal. This system, evolved by the author and consistently used in his own drafting-room, is actually the most accurate practical method of laying off angles that has so far been invented. It can be mastered in ten minutes, and is unforgettable once the easy arithmetical preliminaries are understood. The symbols used in the Diagrams can then be dispensed with, though their use avoids any possibility of confusion. At Diagram "2," the required angle lies between two inherent obliques, rather than between the given line and one oblique. Diagram "3" shows the process by which the central angle of the tridecagon shown at Diagram "2" of Figure 112 in Part 12 was determined—1-13th of 360 degrees. At Diagram "4," the required angle runs to seconds, but the process is exactly the same. In this case, however, the final irreducible units are further divided by 12, thus getting the proportion in terms of feet and inches, as indicated, and rendering the distances easy to lay off at any suitable drafting scale. Of course, the units 499 and 401 could just as readily be laid off with the decimal scale. The results would be the same: it would not change the angle so long as the proportion between the units remains unchanged. The point is: the final units used can always be gotten into such form that they can be exactly laid off to any convenient or suitable scale. The only departure from "theory," in this practical method of laying off angles, is the assumption that one of the forty-eight \( \frac{7}{2} \)-degree sectors of a circle is a triangle. The departure from practical exactitude is nothing. In fact, since the bisector of a \( \frac{7}{2} \)-degree angle is also the bisector of its arc, the method is also theoretically exact for every angle that is a multiple of \( 3\frac{3}{4} \)-degrees.

At Diagram "5," of Figure 117, a practical method of "scaling" any angle is shown, which also can be applied to the laying off of any required angle when the number of degrees, whole or fractional, is expressible in a number which, considered as inches, could be accurately laid off at some convenient scale. This is how: Let \( BAE \) be an angle, not exceeding 60 degrees. You want to measure this angle with the drafting scale. All right: At any convenient scale, the larger the more accurate, draw the arc \( BE \) with a radius of 5'-0", and, on a 30-degree line through \( A \), make \( AC \) equal 9'-11" at the same scale. Draw a short line from \( E \) directed to \( C \), and cross this line at \( D \) with a 60-degree line from \( B \). Now, measure \( BD \) in inches, at the scale used. Call these inches degrees. That's it! Now, if the angle to be measured exceeds 60 degrees—the angle \( BAF \) or \( BAG \), for instance—then first cut off 60-degree chords with the same 5'-0" radius until the remainder \( BAE \) becomes less than 60 degrees. Measure this. Then add to it the number of degrees first cut off. Again: that's it! You can measure any angle whatsoever.
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by this simple method with as much accuracy as you could read it off a protractor. Now I presume you wish to lay off an angle of, say, 52 degrees by this method. Merely reverse the above measuring process: Draw an arc of 5'-0" radius at any suitable scale, and locate C at the same scale. On a 60-degree line from B, make BD equal 52 inches, which is the number of degrees required. Project D, collinear with C, to E on the arc. Then ABE will be the required angle of 52 degrees—and, if your work has been careful, no one can prove, graphically, that that angle is not 52 degrees. So there you are—another theory gone glimmering! But suppose the required angle exceeds 60 degrees. Well, first reduce it, arithmetically, by any number of 60-degree intervals that will leave a remainder less than 60. Lay this off. Then add, graphically along the arc from E, the number of 60-degree intervals originally subtracted. This graphical addition is merely the process of laying off 5-foot chords from D to F or G, as required.

Three cases are shown in Figure 118 in which the vertex of the required angle is off the board. At Diagram "1," ab is a given arc of known radius but with its center inaccessible. It is required to locate a point d removed any number of degrees, A, from the given point e on the arc. Here, A is the angle subtended by imaginary radials from e and d. Hence, the arc cd is the arc of the required angle, and the straight line cd is its chord. From a table of trigonometrical sines, find the sine of half the angle A. Multiply this by 2. Multiply the result by the known radius of the arc ab. This is the actual length of the chord cd. Hence, with this as radius, and from e as center, cross the given arc at d, which is the point required. This can also be found by purely geometrical means—but the method just given is the simpler of the two. The other, however, will be made known in connection with Diagrams "3" and "4." At Diagram "2," it is required to measure the given angle A, subtended by a given arc cd of unknown radius and inaccessible center. Through either given point, say c, draw a radial. (See Part 8, Figures 71 and 72.) From the other point, d, draw a perpendicular to this radial. Then the angle formed by this perpendicular and the chord cd is equal to half of the angle A, as indicated. In other words, twice the angle cde is the magnitude of the given angle A. The problem presented and solved in Diagrams "3" and "4" is one seldom encountered in practice; but it's interesting, and affords a most excellent test of your geometric workmanship. In each of these two Diagrams, the two given converging lines, ab and cd, form an angle, G, of which the vertex is off the board. It is required to determine the placement of another line, pq (of either Diagram), such that it will make a required angle, R, with ab, and, at the same time, be directed to the inaccessible vertex of the given angle G. Both Diagrams are solutions of the same problem, and carry the same reference letters. Here's the way to do it—and, as I say, it requires very careful workmanship: From any indented point, e, on ab, draw ef making the required angle with ab. Cross ef with any perpendicular thereto, gh. Project e to m, parallel with cd; and project m to n, parallel with le. (If the intersection at n becomes too acute for accurate definition of this point, then use one of the "detective" methods here-tofore given at Figure 65 in Part 7 to locate n.) Now make mn' any multiple of js, and make kk' the same multiple of jk. Then project e to o, parallel with n'k', and, through o, draw pq at the required angle (parallel with js). The line pq is the line required, converging to the same inaccessible vertex as the sides of the given angle G, and making the required angle R with the line ab. Now, if no trigonometrical tables were at hand, you could use the above method to lay off the angle, A, of Diagram

![Figure 118](image-url)
"1," by drawing a radial through $c$, and a second one anywhere you choose, and then using these two radials to locate a third radical which would cross the arc at $d$ and correspond with the line $pq$ as found at Diagrams "3" and "4."

Figure 119 shows the surveyor's method of measuring and recording angles by reference to the north and south "meridian." This shows very clearly that the angle contained in the descriptive "bearing" of a line is merely the angular deviation of that line from the meridian, and should clear up the confusion which architectural draftsmen often exhibit in laying out plot plans from data furnished by the surveyor.

We shall now do a little surveying ourselves—so as to get the surveyor's "system" thoroughly imbedded in our system, and thereby rout the last vestige of said confusion—!

Set up the transit at station $a$, Figure 119. Swing the telescope into line with a stake at $b$. From the compass, read off the angle between the line of survey and the needle. It's 25 degrees. The compass needle is the "meridian"—the North-and-South line to which all surveyed angles are referred. Hence, since the line $ab$ lies at an angle of 25 degrees in respect to the meridian, and since, as the compass shows, it bears North and East from the point of survey, $a$, the direction of the surveyed line becomes properly and fully designated as "North 25 degrees East," which designation, in the customary abbreviated form, is given in the Figure as it would appear upon the subsequent draft of this particular "survey." Now swing the telescope through an arc of 180 degrees—half a revolution—so that it points in the exactly opposite, or reverse, direction. Place a stake at $d$, on the line of sight. Now, it is plainly evident that the line $ad$ is merely a prolongation of the line $ba$, or, in other words, that $bd$ is a straight line. Yet, in respect to the position, $a$, of the surveyor, the portion $ab$ bears North and East while the portion $ad$ bears South and West. But, in respect to the meridian, N-S, the two portions make the same angle, namely 25 degrees, as designated in the Figure. Similarly, the line $ce$ is one line through the transit-position $a$. Yet, in respect to $a$, $ae$ bears North and West, while $ae$ bears South and East; but, in respect to the unchanged meridian, each makes the same angle of 55 degrees. You can now see why the "bearings" of the opposite sides of a surveyed parallelogram are always the reverse of one another in spite of the apparently-contradictory facts that said sides are parallel and bear the same numerical angle: the lettered "bearings" refer to the direction in which the surveyor looked along each line in the changeable course of the survey, but the numerical angles refer to the assumedly-fixed meridian. One surveyor may survey a certain plot of ground by starting at a certain corner and moving around to the right. Another surveyor may survey the same plot of ground by starting at the same corner and moving around to the left. The corresponding plotted lines of the two surveys would carry exactly opposite bearings, but the angles contained in those designations would be the same—or, rather, they would be the same if any two surveyors could read a compass alike!—or if any one surveyor could read the same angle twice, alike. These qualifying "ifs" have no bearing whatsoever relative to the meridian. I can't understand why they were even mentioned. A quite recent survey of this particular field, Figure 119, along the lines there laid down, leads me to again approach the subject from another angle—several other angles, in fact. You have, no doubt, discovered the remarkable fact which Mr. Euclid has a prior copyright on—that when two straight lines cross one another they form four angles. So have I. And I have also discovered the fact that, of these four angles, the ones opposite one another are equal to each other. So have you. So has anybody who ever drew a geometric X for exercise—or otherwise. Look again at Figure 119. The angles 1 and 5 are equal; 2 and 6 are equal; 3 and 7 are equal; and so are 4 and 8. Hence, since the angles 5 and 6 total 90 degrees, you could, by knowing the magnitude of angle 1, deduce the magnitude of angle 6. Well, that's how to apply your knowledge—else your discovery, and my discovery, and anybody's dis-
covery, of Mr. Euclid's proposition that when two straight lines cross one another they form four oppositely-equal angles—don't amount to much; just an X-ercise. Again, consider for the moment, any straight line, say the meridian line N-S of Figure 119. The line \( bd \) crosses it at an angle of 25 degrees. Is there, then, any doubt about the fact that the angle \( baS \) is 180 degrees minus 25 degrees? Can't be. All right, then you know this, too: when two straight lines cross one another, any two adjacent angles, of the four angles thus formed, sum up to 180 degrees. Two angles are "adjacent" when they have a common vertex and a common side. So, if the magnitude of the angle \( Nac \), say, were known, you should exhibit no hesitancy whatsoever in finding the number of degrees in the angle \( Nae \), or the angle \( cas \). In fact, from the two angles, \( 1 \) and \( 2 \), given in this Figure, every other numbered angle is made determinable.

Or, now getting right to the point, if the "bearings" of but the two lines \( ab \) and \( ac \) were given, you should now be able to tell the angle which any line of the Figure makes with any other line. Now you are ready to lay out that plot plan of Mr. So-So's property from the data that just came in from the surveyor's office. You know the property well—it fronts on Easy Street:—

Figure 120, at Diagram "1," shows you how. This is the method the surveyor himself uses. It eliminates all likelihood of accumulated error, since all angles are laid off directly from the designated bearings of the lines in respect to the meridian, which latter becomes either a vertical or a horizontal line on the drafting board (whichever appears the more convenient), through the particular point of the survey from which the angle dates. In other words, each corner of the plot becomes the vertex of the required angle, and the "meridian" becomes one given side. The meridian need not necessarily be an actually drawn line—it can be an imaginary one. In the Figure, however, lines representing the four cardinal points of the compass are shown through each "joint" so as to render misunderstanding difficult. Say we start our layout at corner 1. The survey shows that the bearing of the boundary line 1-2 is North and East, and that it makes an angle of 18 degrees and 20½ minutes with the imaginary meridian line through corner 1. Hence, we have started our "plotting" in the same direction that the surveyor surveyed. If the line 1-2 had been designated as bearing South and West, instead of North and East, it would have indicated that the surveyor travelled around the property in the opposite direction. In which case, we would lay out the plot in the same manner, that is, by laying off the line 1-4 first. As it is, however, the direction 1-2 is the one here to follow. So, lay off the line 1-2, from corner 1, at the designated angle of 18 degrees and 20½ minutes in respect to the real or imaginary meridian drawn through this corner. On the thus-determined boundary line, now lay off the given distance \( A \), as marked on the survey, and at the scale you have chosen for the plot.
plan. This brings you to corner 2. Here, the designated bearing indicates that the boundary 2-3 bears South and West from corner 2, and that it makes an angle of 85 degrees and 50 minutes with the meridian through said point. Lay this off. Then lay off the distance $B$—so corner 3 becomes fixed. In this manner, all lines of the plot should be determined. Always work directly from the given bearings, laying off the angles contained therein from the meridian as a base—never by laying off the angles between the actual lot lines. These actual angles should, however, be eventually marked on the finished plot, in order that the latter be replete with all available data. Now you can apply the knowledge of related angles which the previous discussion pertaining to Figure 119 contained. In other words, from the “bearings” given on the plot plan of Figure 120, you can “deduce” the magnitude of the interior angles, $\angle 1, \angle 2, \angle 3$ and $\angle 4$. However, inasmuch as this is a practical and typical example, I have shown at Diagrams “2” and “3” of Figure 120, how these interior angles are procured. The process is mostly mental, but I’ve made it graphic so as to allow you to give it thought. Before you leave the four corners of this plot, as given at Diagrams “2” and “3,” you should unravel, fully, the process by which those four interior angles are there arrived at. Possibly you know already. Then look at Diagram “4,” which indicates the entirely general fact that the sum of the interior angles of any plane quadrilateral figure, such as the plot plan of Diagram “1,” is equal to four right angles or 360 degrees. Hence, if your calculation, or deduction, of those four interior angles has been made correctly, this is a fair check. However, it is not an absolute check—since two or more compensating errors may have produced the same result. This, though, is highly improbable. If the closing side of the plot, say the side $4-1$, checks with the designated bearing and with the given dimension thereon, and if the four interior angles then sum up as 360 degrees, the layout may be accepted as correct! But, incidentally, surveyors have been known to be in error. So, if the careful laying-out above outlined will not stand the checking tests mentioned, the mistake is in the survey, not in your plotting of that survey. Now, assuming all’s well, you can “square up” your plotted plan on the board with the street line or any other bounding line most appropriate for the final layout of the grounds and placement of the building outlines thereon. So you see, you must, in the beginning, allow yourself plenty of paper to withstand the eventual “trimming” of the squaring-up episode. Or else you can make the final plot as a tracing from the original—indenting all definitely-located corners with the point of the dividers before tracing the connecting lines. Diagram “5” shows the final plot all set for development, and with all available data thereon—lot line dimensions, bearings, interior angles, and the meridian. Diagram “6” indicates “some expedients” that you might have employed. Assume that the two sides, 1-2 and 1-4, have been laid out. Then, by crossing two arcs of radii equal to the dimensions $B$ and $C$, respectively, and with centers at the corresponding corners 2 and 4, as shown, the intermediate corner, 3, is fixed without the necessity of laying off the angular bearing of the two closing sides thus placed. Again, let the figure 1-2-3-4 be the plot submitted by the surveyor—usually drawn to a decimal scale. Plot plans of development and landscaping must be drawn to a scale of feet-and-inches to be of any working-value. Well, mark any interior point, $e$, on the surveyor’s plan, preferably, however, at the intersection of the bisectors of any two of its interior angles, as shown. From $e$, draw lines through all corners. At any point $k$, on one of these lines, draw $kl$ parallel with one of the sides and make it equal to the length of that side at the scale you desire. Project $l$, parallel with $je$, to $m$ on $ef$. Draw $mn$ parallel with 1-4, and draw $mp$ parallel with 1-2, crossing the radials $ej$ and $eg$ at the new corners $n$ and $p$, respectively. Through these corners draw lines paralleling the other two sides of the survey and meeting at $g$, which point, if your projection has been accurately done, will fall on $eh$ as shown. Then $mnkp$ is the new plot drawn at the scale you adopted for the initial line $kl$. Or, the new plot may have been the plan $tnst$, depending upon whether the process was one of enlargement or reduction. Obviously, the identical principle is applicable to the enlargement or reduction of any shape whatsoever. Caution: the expedients above described afford no check on the surveyor. They assume his layout as correct.

**Figure 121**

[870]
THIS VOLUME of Viollet-le-Duc's *Rational Dictionary of French Architecture* may, in some respects, be considered the most interesting of the entire set. The subjects that fall within it, through the mere coincidence of an alphabetical arrangement, are such as to make it especially attractive all the way through. Although there are only a little more than forty subjects treated, yet those are of such a nature, and of such importance that each is discussed at some length and effectively illustrated.

The translation reveals materials, not readily available, on such subjects as: the French *palace* of the Middle Ages in all phases of its development; French *half-timber* work, which has characteristics all its own; an exhaustive treatise on *painting*, as applied to architecture, during this period, a subject upon which there is but little available information; the *gable* in many interesting forms is explained and illustrated; the *pier*, especially as used and developed during the Romanesque and Gothic periods, is treated in every phase; the *pinnacle* in its varied and aspiring forms finds its place here; the *ceiling*, in construction, decoration, and detail also claims attention; an interesting and instructive account of *lead work* on roofs, gutters, and other exposed parts of buildings is given; the *pont* or *bridge* receives special attention of Viollet-le-Duc, thus indicating the importance of the bridge at this point in French history; *portals* and *porches*, especially those of the type developed in the finer churches and cathedrals, are given considerable space and well illustrated; following this there is an exhaustive and analytical study of architectural *profiles* of great variety; the *portico* and *balcony* are also given consideration; and the volume closes with an interesting account of the well and *well-courts* of the Middle Ages. All of these are accompanied, in the original, with well selected and finely engraved illustrations, examples of which accompany this article.

The *palace* is the first subject covered in this volume. The translation extends over twenty-eight pages in which every phase of the development of French castles or palaces of the period is discussed. The account as given forms an excellent background to the domestic architecture of France. Perhaps no country in Europe had a greater variety of palace architecture. The various types have been carefully studied by Viollet-le-Duc and are recorded here in a very instructive manner.

While palace architecture may be somewhat outside the realm of most modern architects, yet there are many phases of the smaller French domestic types that will offer direct inspiration for modern work, such, for instance, as French *half-timber* work. During the Middle Ages the use of half-timber construction was very common in France, and it reached a high state of perfection. This work is a combination of heavily framed wood sills, posts, braces, and ties, with the interstices filled in with masonry. This type of construction was particularly applicable to the narrow town-house, and at this period in French history the narrow streets of most of the cities were lined with houses and shops of half-timber work.

In the early half-timber work the heavy wood structural members were set only at right angles and the posts halved into sills and plates. End posts were rarely used in this early work, but the half-timber work was
An early French half-timber house showing how the framing was fitted in between the stone party walls which projected forward. The framing of this period was of large timbers.

A later and more advanced type of half-timber work showing lighter members and also that the entire front was of framing, the ends of the party walls here being concealed.

A still later development in French half-timber framing, made up of many small members. This period is also characterized by the use of a great variety of projecting bays and turrets at the corners.

ILLUSTRATIONS FROM VIOLET-LE-DUC'S "DICTIONARY OF FRENCH ARCHITECTURE," VOLUME 7
set between the two projecting ends of the masonry side walls. A well developed example of this type is that of an old house at Dreux, shown restored here. A great amount of labor was evidently expended upon the construction of this framework, for it was all of heavy timbers and very carefully joined. Joints of many different types were used, indicating that even at this early period half-timber framing was a highly developed art.

By the end of the XII Century lighter and more economical methods of framing are to be found. The end walls and gables of stone are all replaced by half-timber. The upper stories are often corbelled out. Details showing the method of framing are given here. In a three-story house the corner posts were usually eight or nine inches square; intermediate posts six or seven inches square; floor beams were placed about three feet on centers and these carried the lighter framing of the floor. Swaying of the frame was prevented by strong corner braces and X braces below the window sills.

Viollet-le-Duc was perhaps the best authority of his time concerning the use of color on the architectural monuments of the Middle Ages. Consequently his extended discourse, in this volume, on painting and its relation to architecture is one of special interest to the architect. From the time of the Renaissance on down to the present, color in architecture has been increasingly neglected, even to the point where it was questioned whether the architects of the Medieval Period ever used color to any extent on their structures, but in recent years the subject has been more completely revived. Viollet-le-Duc’s study has been quite extensive and his discussion of painting is well worth studying. The translation covers more than fifty pages, and the original contains twenty-one illustrations. Unfortunately, however, these are not in color, but are diagrammatic showing how the color areas were divided.

Viollet-le-Duc traces the early influence which brought to France the art of painting her architecture. He cites the Gallo-Roman and Italian traditions and the Grecian-Byzantine influences. The latter he believes exerted a most potent influence in favor of color. “It is not doubtful that this art was developed in the cloisters and proceeded from Grecian-Byzantine art. At that time the most beautiful fabrics, furniture, colored utensils, even a great number of manuscripts, brought from the Orient were contained in the treasuries and libraries of monasteries, and served as models for the monks devoted to art work.” The art of painting seems to have been practiced very extensively in France during the Middle Ages and it was considered a part of architecture—the two arts mutually aiding each other. Old accounts state that “churches and cathedrals were painted and decorated in splendor.” It is recorded that when Bishop Hincman was rebuilding the cathedral of Rheims he “ornamented the vaults by paintings.” Viollet-le-Duc found evidence also that the architects of this period, like the ancients, also painted the sculpture of the interior and
of the exterior of their edifices. Wherever an interior was painted, the "entire surface was painted, including the sculpture." He also states that "decorative painting is not only applied to the surfaces of interiors, but it plays an important part on the exterior of edifices. The façade of Notre Dame of Paris presents numerous traces of painting and gliding, not laid on the bare walls, but on mouldings, columns, ornamental sculptures, and statuary. One can make the same observation on the cathedral of Amiens." He then describes in detail the various parts colored, the colors used, their intensity, methods of outlining figures, gilding, etc., and cites many examples. Altogether, the article on painting is a most valuable one, being the result of many years of research by one who had the opportunity of carefully examining the original structures.

Those interested in church design will find the discussion of **piers**, by Viollet-le-Duc, to be of value. The use and development of the pier systems, in French Romanesque and Gothic architecture, is carefully examined in every phase, the true function shown, and the proper architectural expression indicated in drawings.

The **pinnacle** is another of the architectural elements of the French Gothic of the Middle Ages which was developed because it had a specific use, and was not a mere ornament as it so often becomes in modern adaptations of the Gothic. "Like all architectural members of that time, pinnacles fulfill a function; they secure the stability of vertical supports by their weight. The brilliant epoch of the pinnacle came when architects began to erect flying buttresses." It being necessary to add a load at the upper part of the buttresses, the French builders made it a "beautiful necessity," consequently the pinnacles became a logical decorative feature, growing out of construction. Another interesting subject discussed at some length by Viollet-le-Duc is that of the **pont**—or bridge—of the Middle Ages. It is a valuable and inspiring subject, in that it reminds us of a phase of architecture that has been almost lost to the modern architect. From the time of the Romans on down through the Middle Ages and the Renaissance, bridge design was within the domain of the architect, but in the past century it fell increasingly to the engineer, and utility, economy, and speed of construction were paramount, while the aesthetic qualities were often entirely neglected. Only in recent years has the architect in this country regained his place in this field of architectural endeavor. Viollet-le-Duc's discourse on bridges is well worth reading just for the inspiration it offers architects, especially those who are interested in this phase of architectural design.
SEVILLE CATHEDRAL

RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN
A PLATE FROM THE WORK BY ANDREW N. PRENTICE

PENCIL POINTS
Before the fall of the choir, the screens in Seville Cathedral were the most splendid in Spain, both in size and magnificence. The example given is one of the lateral screens to the Capilla Mayor, wrought by Sancho Muñoz in 1518, and although not so high and elaborate as that facing the high altar, it is of great beauty. The twisted pillars are of solid iron, and the cornices are formed of hammered iron plates. This screen is entirely gilded from top to bottom.”

A. N. Prentice.
RESIDENCE AT BEVERLY HILLS, CALIFORNIA—KOEHRER AND GAGE, ARCHITECTS

FROM A RENDERING IN TRANSPARENT AND OPAQUE COLOR BY ROBERT LOCKWOOD

PENCIL POINTS

(November, 1930)
PENCIL POINTS SERIES
of
COLOR PLATES

At the time this drawing was made, Mr. Lockwood was experimenting with washes, using body color (no transparent color) thinly, like water, laying wash over wash, building up tones. The perspective layout was first outlined in ink, freehand, on brown cardboard. Color was applied to all parts of the drawing at once, establishing a general “key.” Then, after working a bit on the foliage, windows, etc., a heavy wash of burnt sienna with a little blue in it was run down over the entire assemblage of body color which settled it in this case in a rather pleasing way. Doing this with thin body color over heavy is a delicate stunt because the heavy color sometimes lifts, but when successful it gives a good effect. It is necessary to use a very full puddle and work quickly “with extreme care and considerable recklessness” to quote the artist. As a finishing touch the building, roof, and bits of the foliage were painted up with heavy color. The sky was given a final coat of cobalt, mauve, and black. The original measured 24½” x 13”.
This rendering was made by a well known draftsman who, for good reasons of his own, wishes to remain anonymous. It was very large, the original measuring about 72" wide. It is reproduced as a suggestion of a way for presenting large schemes where the horizontal lines of the architecture may be advantageously broken up by the foreground trees. In this particular case the natural setting for the buildings lent itself quite well to this type of composition.
This sensitive pen and ink drawing by Henry P. Kirby was originally published by the Cutler Manufacturing Company as part of a series of plates prepared for them for architects. This particular reproduction was made from one of the plates in possession of Arthur M. Duncan of New York through whose courtesy we are able to present it here.
PENCIL POINTS FOR NOVEMBER, 1930

This drawing was made for Ware's "The Georgian Period" in 1898. Aside from being a bit of fine draftsmanship it preserves a record of a graceful example of Colonial doorway and its publication here is therefore doubly useful.
FROM A DRYPOINT BY MORRIS HENRY HOBBS

"NOTRE DAME, PARIS"

PENCIL POINTS
On this plate we have reproduced a drypoint by Morris Henry Hobbs, an Evanston, Illinois, architect who, in his spare time, turns out excellent prints such as this one. The original, which measures 7" x 9", is quite professional in quality.
DESIGN FOR AN EIGHT-ROOM HOUSE
THE PENCIL POINTS COMPETITION

SUBMITTED BY GALEN W. BENTLEY, NEW YORK
PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

[ 895 ]
PENCIL POINTS FOR NOVEMBER, 1930

THE DESIGN FOR AN EIGHT-ROOM HOUSE

SUBMITTED BY WILLIAM C. HUNCE, DETROIT, MICHIGAN

PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

MULTIM.

FIRST FLOOR PLAN

SECOND FLOOR PLAN

DETAIL OF ENTRANCE

SIDE ELEVATION

REAR ELEVATION

PATIO

[ 896 ]
ADDITIONAL PENCIL POINTS COMPETITION DRAWINGS

SUBMITTED BY CHARLES H. HOLMSTROM, STATE COLLEGE, PENNSYLVANIA

PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

[ 897 ]
"LA CASITA"
A DESIGN FOR AN EIGHT ROOM HOUSE
THE PENCIL POINTS COMPETITION

SUBMITTED BY CLARENCE H. RAWLINGS, PHILADELPHIA, PENNSYLVANIA
PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE
PENCIL POINTS FOR NOVEMBER, 1930

DESIGN FOR AN EIGHT ROOM HOUSE

~ THE PENCIL POINTS COMPETITION ~

SUBMITTED BY FRANKLIN SCOTT, WHITE PLAINS, NEW YORK

PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

[ 900 ]
ADDITIONAL PENCIL POINTS COMPETITION DRAWINGS

Design For An Eight-Room House
The Pencil Points Competition

Submitted by C. Roderick Spencer and John James Landon, Los Angeles, California

Pencl Points Competition for an Eight-Room House
DESIGN FOR AN EIGHT ROOM HOUSE
PENCIL POINTS COMPETITION

SUBMITTED BY LLOYD STEFFGEN, PASADENA, CALIFORNIA

PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE
PENCIL POINTS FOR NOVEMBER, 1930

PENDLETON POINTS

SUBMITTED BY LYLE REYNOLDS WHEELER, HOLLYWOOD, CALIFORNIA

DESIGN FOR AN EIGHT-ROOM HOUSE
THE PENCIL POINTS COMPETITION

_SUBMITTED BY LYLE REYNOLDS WHEELER, HOLLYWOOD, CALIFORNIA

PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE
COMPETITION FOR THE GUY LOWELL MEMORIAL SCHOLARSHIP

This scholarship is given in memory of Guy Lowell, 1870-1927, a distinguished architect, who believed in the importance of foreign study and travel, and who was a generous and sympathetic friend of all students.

The value of this scholarship is represented by an annual award of $1,000 to assist draftsmen, and students in schools of architecture whose previous preparation includes three years of office training, to benefit by six months' travel in foreign countries.

The competition is open to citizens of the United States of good character, who are between twenty-one and thirty-one years of age, and who have had at least three years of office experience.

The competition will be held the first Saturday and Sunday in February, 1931.

The scholarship is under the direction of a managing committee of three, composed of the Chairman of the Committee on Education of the Beaux-Arts Institute of Design, the Head of the Department of Architecture at the Massachusetts Institute of Technology, and a practicing architect in Boston.

Competitors are allowed to prepare their drawings wherever conditions conform to the requirements of the committee in charge, but these drawings must be sent to Boston for judgment.

All questions and applications should be addressed to and application blanks returned to Mr. H. P. Richmond, 12 West Street, Boston, Mass., on or before December 20th.

GEORGE BURDETT FORD

1879—1930

A STAR OF THE FIRST MAGNITUDE in the galaxy of who's who in civic affairs has passed from view.

Son of a New England schoolmaster, Mr. Ford's brilliant record in architecture and city planning at home and abroad, as evidenced by the long list of his responsible connections with important national and international organizations, justifies the claim that he had a successful career in spite of the fact that its untimely ending at the age of fifty-one makes his remarkable record of achievement seem but a deep and broad foundation for that greater public helpfulness to which he aspired.

Endowed with unusual intelligence, his health, energy, honesty, industry, courage and ability to work with other people, combined with his shrewd estimate of his own capacity and limitations, are the important factors in his success. The absence of erratic and extravagant ideas in his work, a sort of inspired practicality, made his service to the world of a fundamental type to which communities turned with relief in preference to showy and speedy methods for producing results.

Mr. Ford's interest in city planning was aroused by research incidental to the preparation of his thesis design for A Tenement in a Large City at the Ecole des Beaux-Arts, Paris, 1907. His addresses and discussion at meetings of the National Conference on City Planning about twenty years ago were largely concerned with housing. At that time he was a member of the architectural firm of George B. Post & Sons, of New York and Cleveland, where he managed their branch office. Also at that time he was an associate member of the American Institute of Architects and a member of its town planning committee.

His efforts to further consideration of aesthetics met with opposition in city planning circles and it was with some reluctance that he acquiesced in the decision to stress the practical economic value of city planning; but when the decision was made to do so he supported it loyally for nearly a decade. Upon his election as president of the American City Planning Institute, however, a policy of open recognition of aesthetic and social values was adopted and since his administration closed these factors have also been recognized as valid reasons for city planning. Since his appointment in February, 1930, as General Director of the Regional Plan Association, Inc., of New York, he has had the ideal of civic design constantly in mind and although he felt that there are many practical considerations of an engineering nature that must precede any application of the principle of architectural control, nevertheless, he initiated through that organization many projects for civic embellishment in the New York region that display great ability as an architect. This broad service, together with his administrative ability, makes his death an incalculable loss to the architectural and city planning professions.

To the public Mr. Ford was always accessible and, in the opinion of the writer, would have been an excellent ambassador; as a fellow worker he was always open to suggestion and never spared himself; as a teacher he preferred the lecture platform and writing as a medium of expression rather than debate, with the result that personal salesmanship was not one of his accomplishments; as a friend he will be missed by the author of this humble tribute as an elder brother.

Chevalier de la Légion d'Honneur, in death we salute thee.—Harry B. Brainerd.
THE NEW YORK ARCHITECTURAL CLUB, INC.

ATELIER NEWS

The Brush Singers in the Atelier of the New York Architectural Club are about to embark on another one of those successful annual costume dances, which in the past have always gone over with a bang.

This dance will be held in the lounge of the Club, 118 East 42nd Street, on Thanksgiving Eve, November 26, 1930.

The proceeds of this dance will be used to enlarge the atelier library, and supply other needs of equipment.

Tickets can be obtained at the Club.

JOHN W. KNOBLE,
Trustee.

A COMPETITION FOR SMALL SCULPTURES

A Competition for Small Sculptures, to be executed in Rosenthal china, has been announced by the Art Alliance of America.

A first prize of $1,500, will be awarded, a second prize of $750, a third prize of $500, and two special awards, one of $500 and one of $250, will be given.

The competition is open to all residents of the United States. Models will be received by the Art Alliance of America between January 14th and 20th, 1931. For a copy of the program of the competition write to the Secretary, Ceramic Sculpture Design Competition, Art Alliance of America, 65 East 56th Street, New York.

LOS ANGELES COLLEGE OF ARCHITECTURE AND ENGINEERING

The Los Angeles College of Architecture and Engineering commenced activities on September 2nd, last.

The purpose of this college is to give a complete system of practical training to prepare students as architectural and engineering draftsmen, to provide advanced instruction for those already qualified as draftsmen who wish to extend their knowledge, and to prepare candidates for the State Board Examination necessary to secure a license to practice architecture or engineering.

The course includes architecture, structural engineering, and civil engineering.

In addition to the day course evening classes are held. The College is located at 2256 Venice Boulevard, Los Angeles, California.

THE ARCHITECTURAL SKETCH CLUB OF CHICAGO

The Architectural Sketch Club is one of the oldest professional organizations in Chicago, but it caters primarily to the younger draftsmen and students and its aims are almost entirely educational. The Club is forty-six years old, having been organized in 1884.

Its principal activity is the Atelier which is presided over by Patrons A. S. Adams and Donald S. Nelson.

In addition to the regular competition of the Beaux-Arts Institute of Design, the Atelier conducts several prize competitions yearly and in the Spring conducts the Annual Foreign Scholarship, which provides $1,200, through the generosity of the Chicago Chapter A.I.A., Illinois Society of Architects, and the Chicago Architects Club.

Minor activities of the club include lectures and talks by prominent men in the architectural and building field and social affairs for the club members and their friends twice a year.

There is a three-months' class in structural design to aid members in passing the State Board Examination for Architects' Registration.

A quota of about three hundred and thirty active, senior, and non-resident members indicates that the club fills a definite need in Chicago's architectural life and that the club is striving to do its share in raising the standard of architectural design and practice in Chicago.

A WAR MEMORIAL, LILY HALL MCLUCKIE, SCULPTOR

The design for a War Memorial shown above has been accepted as the Gold Star Mothers' Memorial for New York State. Dr. Emma L. Balcom, the National Organizer of the Gold Star Mothers, says that the Committee hopes to place the monument in Washington, D. C., as a national memorial. This model was shown at the Spring Exhibition of the National Academy of Design, 1930.

PRATT ARCHITECTURAL CLUB, INC.

The Pratt Architectural Club's annual fall dinner will be held at the Fraternity Club's Building, New York, on Wednesday evening, November 19th. Mr. Ralph Walker, of the firm of Voorhees, Gmelin, and Walker, will be the speaker of the evening.

The Club's annual smoker was held at the Fraternity Club's Building, October 22nd. Over a hundred members turned out. Mr. Kenneth Reid, Associate Editor of Pencil Points, as guest of the Club, concluded the program with a brief talk.

THE ARCHITECTURAL SKETCH CLUB OF CHICAGO

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A NEW BOOK AND PRINT SHOP IN THE CITY OF NEW YORK

The English Book Shop has recently opened at No. 55 East 55th Street. The stock consists of rare books, private press issues, first editions of modern authors, also a selection of current English and American books.

In addition to the books there will be found at this delightful shop a fine selection of prints, both European and American, old as well as modern.

The English Book Shop offers a service which should appeal to collectors located at a distance from New York. Special orders are solicited from collectors for rare items, especially those of European origin, as the proprietors have unusual facilities for locating and securing rare books and prints. Correspondence is invited.

The English Book Shop will also hold a series of small exhibitions during the season, to be announced later, the first devoted to all the books illustrated by Mr. Rockwell Kent, with a selection of original drawings.

NEW YORK SOCIETY OF ARCHITECTS

The New York Society of Architects has extended its activities so as to admit into its body an auxiliary organization or Junior League. This is intended to be of benefit to the draftsmen or junior architects who are not yet registered under the law.

The object of this new organization is principally educational and partly social. A program for the winter season covering the following subjects has been arranged:

- The Education of an Architect
- The Functions of an Architect and his Relations to the Client
- Modern Tendencies in Design, Methods of Studying a Project Beginning with the Sketches
- Letting Contracts, Supervision of Work in Field, Technique of Writing Specifications, Office Administration, Organization and Cost of Producing Drawings, Selection of Building Materials
- Legal Standpoint of the Profession

The work is in the hands of Colonel Louis E. Jallade. He has selected a group of architect leaders in the City to give these talks. These men have been chosen because of their marked ability in the particular subject on which they are to speak.

Admission to the lectures is open to all draftsmen who are interested applying to Louis E. Jallade, 15 East 47th Street, New York, N. Y.

The first lecture covered The Education of an Architect, and was given by Mr. Coe, formerly associated with Carrere & Hastings. The lecture was held at the Murray Hill Hotel, New York.

The next talk will be given by Mr. Arthur Holden on December 16th.

ENGINEERS' BOWLING LEAGUE OF CHICAGO

Standing of the Teams

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ACKNOWLEDGEMENT

The Dry Point of Notre Dame by Morris Henry Hobbs, reproduced as one of the plates in this issue, is presented through the courtesy of Francis H. Robertson, Inc. This information was received too late to be inserted in the usual place under the plate.

COPY OF MOSAICS IN CHURCH OF SANTA MARIA IN ARACOELI, ROME—BY LOUIS PIROLA

This drawing was made by Mr. Pirola while in Europe on the Chicago Architectural Club Scholarship. The original measures 6'6'' x 2'4''. The patterns of the mosaics were transferred by covering the original with detail paper and rubbing over it with lead. The sections were then mounted upon a large sheet of paper and painted. Each tessera was painted separately with tempera mixed with gum arabic and glycerine to keep the colors raised when dry and retain a gloss. The mortar joints between the tessera were painted in flat with gouache.
OFFICE ORGANIZATION OF WM. B. ITTNER, INC., ARCHITECTS AND ENGINEERS, ST. LOUIS, MISSOURI

NEW YORK-PHILADELPHIA INTER-CITY BASEBALL CHAMPIONSHIP

The New York Architectural Club, Inc., All-Star Baseball Team made the trip to Philadelphia on September 27th to play the all-star team selected from the Philadelphia Architects' Baseball League by Chief Dryer, President of the Philadelphia League.

A. A. Penfold, President of the New York Baseball Team, and Pop Scheffer's fast aggregation of ball throwers arrived at Broad Street Station, Philadelphia, at 11:00 A.M. After luncheon the two teams were immediately motored to the Philadelphia Rifle Club Field at 8th Street and Labor Road, Philadelphia, where 5,000 excited fans were waiting for the battle between the two architectural teams. It was the Third Annual Inter-City Baseball Championship between New York and Philadelphia, New York having won in 1928 and 1929. The game started promptly at 3:30 P.M., with Long pitching for the visitors and Jeffries for the home team.

The feature of the game came in the ninth inning with the score three to three and a man on second for the home team with two outs. Scheidhauer, up as a finish hitter, drove a line drive to deep center. Wahle recovered the ball and with a lightning throw to Carlisle caught the Philadelphia runner by two feet at the home plate, holding the score three to three, which made it necessary to play an extra inning, the final score being five to four.

The score was as follows:

**New York**

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**Philadelphia**

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We desire to take this opportunity to thank those members of the Allied Arts and Trades who by their kind cooperation and contributions have made this game possible as an annual affair.
SKETCHES MADE BY HENRY HORNBOSTEL, ARCHITECT, FOR THE GEORGE WESTINGHOUSE MEMORIAL IN PITTSBURGH, PENNSYLVANIA

(See text on page 913)
MEMORIAL TO GEORGE WESTINGHOUSE IN PITTSBURGH, PENNSYLVANIA
HENRY HORNBOSTEL, ARCHITECT; DANIEL CHESTER FRENCH, SCULPTOR; PAUL FJELDE, SCULPTOR
(See text on page 913)
NEW ART SCHOOL IN BROOKLYN, N. Y.

The names of Ernest W. Watson and Arthur L. Guptill have so long been familiar to readers of PENCIL POINTS that the announcement elsewhere in this issue that they have joined forces to organize a school known as the Watson-Guptill School of Art is of particular interest.

While Mr. Watson is perhaps best known to our readers for his delightful and instructive Eldorado Page, it is his work in creative art, and particularly in block printing, which has brought him general recognition. His volume, Linoleum Block Printing, was accepted as authoritative as soon as it came from the press. As an educator Mr. Watson's experience has been long and successful. For many years he has been a member of the general faculty of the School of Fine and Applied Arts, Pratt Institute, Brooklyn, N. Y., where he is at present Supervisor of the evening courses in Art, Architecture, and Interior Decoration, and an instructor in the day classes. He was co-founder and director with Raymond Ensign of the Berkshire Summer School of Art, with which school he served over a long period.

Mr. Guptill, though an architect, had training as an artist. He has long been known to PENCIL POINTS' readers for his sketches of architectural subjects in the advertising pages. His books, Sketching and Rendering in Pencil, and Drawing with Pen and Ink, are evidences of his activities along educational lines, for he, like Mr. Watson, has long been connected with Pratt. Ever since 1912 he has served there as a part-time instructor in architecture and interior decoration while carrying on his professional work.

A unique feature of the architectural department of the Watson-Guptill School is that it aims to offer no long-term courses in architecture, competing with those already established elsewhere, but instead to help the draftsman or architect to strengthen his weakness in some particular direction through a comparatively short, intensive course. To make possible this accomplishment a group of courses will be offered, many of them in the evening or on Saturday afternoons. Classes are now forming, for instance, not only in elementary and advanced architectural drafting but in such special subjects as architectural shades and shadows, practical perspective, sketching and rendering, specifications, estimating, and the like. The school welcomes suggestions for courses and invites correspondence. Address the Watson-Guptill School of Art, 209 Washington Park, Brooklyn, N. Y.

EBERHARD FABER OFFERS ART SCHOLARSHIP

EBERHARD FABER PENCIL COMPANY has announced an important competition open to high school students for drawings made with Mongol Colored Indelible pencils.

The first prize is tuition for two years in the finest art schools—first year in America, the second year in Europe. Second prize is $200 toward one year's tuition in a leading American art school; third prize $75 cash; fourth prize $25 cash. Contest ends January 31st, 1931. Prize winners will be announced in April, 1931, issue of trade and art magazines.

The judges will be: James C. Boudreau, Director School of Fine and Applied Art, Pratt Institute, Brooklyn, N. Y.; William M. Odom, President New York School of Fine and Applied Art (Parson's), New York; Felix Payant, Editor Design Magazine, Professor of Art, Ohio State University; Joseph Wieselthier, Connecticut State Director of Art.

Full details may be obtained from Eberhard Faber Pencil Company, Scholarship Dept., 37 Greenpoint Avenue, Brooklyn, N. Y.
George Westinghouse Memorial

The memorial to George Westinghouse was unveiled at Schenley Park, Pittsburgh, on October 6th. The monument was designed by Henry Hornbostel and Eric Fisher Wood, Architects, and consists of a large central panel flanked by two semicircular wings, all of which are made of gold-leafed bronze with Norwegian granite insets. The central panel, of which Daniel Chester French is the sculptor, carries the medallion of George Westinghouse, supported on an open work background of oak tree foliage; on either side are two figures, one a skilled mechanic and one an engineer with his slide rule. Both the portrait and the figure are modelled in full relief. The rear of this panel shows the back of the two figures as well as the conventional design of the oak tree, the panel being worked in full relief on both sides. This was done to avoid constructing just a front and to make the rear view, which is seen as one follows the path leading down the valley, as interesting as the front. This effect is shown in the photograph on page 911.

Each of the flanking wings is divided into three panels, executed by Paul Fjelde, sculptor, and on each is depicted in low relief one of Mr. Westinghouse’s achievements.

Standing well back from the panels and facing it is the figure of the American Youth, modelled by Daniel Chester French. This is of heroic size and is of gold-leafed bronze to correspond with the rest of the memorial.

Special attention has been given to the landscaping of the surroundings of the memorial, as its setting was considered as important as any other detail. The building of the paths, the profuse planting of rhododendrons and countless other shrubs, the removal of trees that marred the general effect and the careful preservation of those that added to it, the placing of Norwegian granite benches, the creation of the pond formed by the stream that trickles out from under the memorial itself—all of these help to bring about a complete artistic ensemble.

A Reply to Mr. Zichner

Chief Engineer, Anti-Hydro Waterproofing Co.

We have observed, with some astonishment, a statement by Mr. Hugo Zichner in your September [page 744] number, to the effect that it is common practice in New York to leave weep holes after waterproofing operations are completed. Mr. Zichner contends that the water flowing through such weep holes carries off the lime of the cement and weakens the concrete.

In an experience of more than 15 years with various waterproofing problems throughout the East, the writer has never seen weep holes left open for more than a few hours after the completion of waterproofing work. That such a practice could be “common” seems utterly impossible, since weep holes are useful in only one type of waterproofing—the plaster coat method, sometimes referred to as the hydrolithic method. Even in this method, weep holes are only used when the wall leaks so badly that the plaster cannot be made to adhere. Then it is customary to cut into the wall at regular intervals and insert small lengths of pipe which are sealed in the wall and project 4” or 5” beyond its surface. The object is to localize the leaks in the wall so that the adjoining areas may be properly plastered. But as soon as the final coat is thoroughly set, these drain pipes are removed one by one, the opening plugged and the surface smoothed off even with the surrounding plaster. This operation is completed just as soon as the condition of the plaster will permit and certainly by the day following the application of the plaster.

Even in plaster coat jobs the necessity for weep holes or drains occurs infrequently, so that their use could hardly be called common, much less the practice of leaving them open.

There can be no doubt, however, that water passing through concrete does dissolve and carry along some of the soluble salts of the cement, probably the free lime. No weep hole is needed to demonstrate this. Any spot on the inside face of a concrete wall, where water is seeping through, will soon show a white deposit that gradually builds up. Where such seepages have occurred in ceilings we have known stalactites to form 8 or 10 inches long. Whether or not this action seriously weakens the concrete as Mr. Zichner contends, we do not know, but we would doubt it. And we are certain that no reputable waterproofing contractor leaves weep holes open for any appreciable time after completing his waterproofing operations.

Brooklyn Chapter, A.I.A.

The October dinner meeting of the Brooklyn Chapter of the American Institute of Architects was held on Monday, the 27th, in the auditorium of the Brooklyn Edison Company’s building. The dinner marked the opening of an exhibition on the main floor of this building during the entire week including Saturday, Nov. 1st.

This exhibition was held through the kindness of the Brooklyn Edison Company in conjunction with their annual lighting exhibition.

The hanging of the work of the members of the Brooklyn Chapter was in charge of the Current Work Committee of which Henry V. Murphy is Chairman.
MEASURED DETAILS OF AN ENGLISH LYCH GATE
MEASURED & DRAWN BY CAROL H. LAWRENCE

NOTE:
- GATES MADE OF OAK.
- JOINTS TO BE FILLED WITH MODERN PUTTY.
- DOORS MADE OF MOSS.

ELEVATION A-A
GRAPHIC SCALE FOR ELEV.

PLAN
GRAPHIC SCALE FOR PLAN

MEASURED DRAWING BY CAROL H. LAWRENCE—PHOTOGRAPHS BY HANNAH L. CHAMPLIN
FURTHER LETTERS ON "THE VALUE OF THE ARCHITECT'S SERVICES"

EDITOR'S NOTE:—Comments on our proposed document, published in the July issue of Pencil Points, still come in from architects in all parts of the country. They are very helpful to us in carrying on the work of revision. A selection of those received recently, quoted below, may be of interest to our readers as evidence that architects everywhere are still thinking about the problem. We appreciate their assistance and invite further suggestions.

From Henry C. Collins, Architect, of Palo Alto, Cal.

"I have followed your educational campaign and have read the material for the proposed booklet with a great deal of interest. My reaction is that you are on the way to producing something splendid. How such a booklet could harm the profession, as your comments say one architect objected, is beyond my conception. That there should be comments of 'too long' is inevitable in this day of short hair and short everything else. The cry that it is too long is a patent criticism of anything written. I agree with your answer to this that you must take space to convey your message. And there is where the only criticism which I have comes in.

"The average person must be inveigled into reading a long message of this sort. Every means and device must be used to excite and carry on the interest. I like particularly your method of an illustration on the reverse of each page. I would make this typical of every page throughout the booklet. Now, in the text of your message, language of necessity, must be somewhat technical and matter-of-fact. But why would it not be possible to introduce the story element in the captions under the illustrations—put in as much human interest as possible; for surely architecture, which serves the second essential of human existence—shelter—must have human interest.

"I would take as my pattern National Geographic, one of the most popular periodicals of our time but one which the most hide-bound of architects could not criticize for lack of dignity. When I pick up a copy of National Geographic I look at the pictures and read the captions. If my interest is aroused I read the accompanying article. Don't you think that my case is a typical one? We must always bear in mind, as one architect has so aptly put it, the public is not so keen about being educated. No matter how excellent your booklet may be we cannot expect that a line will form outside your office as soon as publication is announced.

"That would be the only suggestion I have to offer. The text seems to me to be a perfect statement of the case. In some cases such as under 'What Does The Architect Do For You?' I think the solid pages of type might well be relieved with subtitles or inset titles. Always remembering that Americans are a race of headline readers and yet these headline readers are those whom we want to reach."

From A. J. Russell, A.I.A., of Tacoma, Washington

"Having carefully studied 'The Value of the Architect's Services' I believe the subject could not be treated more clearly and that it would be a great benefit to the profession to have the contents in brochure form, to present to those intending to build."

From William C. Noland, F.A.I.A., of Richmond, Va.

"I wish to acknowledge with thanks your July number, containing the article, 'The Value of the Architect's Services.'

"As you requested comments upon it, I have intended to write you before this; but circumstances have prevented my doing so.

"I realize that the subject is a difficult one to present to the layman in a form sufficiently clear and at the same time sufficiently concise.

"I think the article is along the proper lines and very creditable as it is; but, in view of the nature and importance of the document, I think that no pains should be spared to get it as nearly perfect as possible before issuing it and, in restudying it, to strive to reduce the length of it wherever possible.

"In Sec. 4, Page 574, I think that the statement that the registration laws provide against anyone calling himself an architect without having the proper qualifications would lead a layman to believe that any registered architect would necessarily have such 'proper qualifications.' He would doubtless have some sort of qualifications to get him by the state board of registration; but not necessarily the proper qualifications of a first-class architect. So I think this paragraph is misleading and should be revised. Also, in mentioning the patent laws, you might combine the examples, instead of mentioning them separately, and thus shorten the paragraph.

"On page 577, 4th paragraph, you say 'However, you now have before you the results of the preliminary study in the form of plans and a perspective pencil or water color sketch.'

"I would, by all means, leave out the word 'Perspective,' and say 'Plans and sketch elevations showing how the exterior will look.' Or just say 'Sketches showing the general appearance of the exterior,' without specifying whether the sketches will be in elevation or perspective. To specifically mention a perspective would lead the layman to think that such was customary and that he could therefore demand it of the architect, whereas such is not customary. Sketches are usually made in elevation. The architect does frequently make preliminary sketches in perspective, but that is optional with him and should not be mentioned as a service to be necessarily expected of him. For that reason I would strongly advise that you publish a sketch elevation either in place of the Bird's-eye Perspective that you show on Page 575 or else along with it on the same page."

From Angelo B. M. Corrubia, A.I.A., of St. Louis, Mo.

"I have read with great interest and care your material regarding 'The Value of the Architect's Services,' as published in the July issue. I do not find anything to criticize and I hope that you will not be discouraged from going ahead with at least this much of your educational movement. I regret very much that your original plans have fallen through.

"Please advise if the literature that you propose to publish will be available for use by individuals."
Modern Art—10 Portfolios, by Pedro J. Lemos; 32 plates in black and white and 4 color plates in each portfolio, 8½" x 11"; price $3.00 each; published by The School Arts Magazine, Worcester, Mass.

These ten portfolios were made up by Mr. Lemos to furnish students and designers with stimulative reference material in the so-called modern manner. They cover "Commercial Art and Lettering," "Decorative Design," "Etchings and Block Prints," "Exteriors—Buildings," "Interiors and Furniture," "The Art of the Book," "Novelties and Jewelry," "Lighting Fixtures and Iron Work," "Posters," and "Sculpture and Pottery." Each portfolio is procurable separately. The material was selected by Mr. Lemos from among thousands of examples collected abroad and represents what he believes to be the most typical and best examples under each heading. The specimens of commercial art and decorative design are particularly good, but all of the portfolios should prove useful to designers working in the fields covered.

Modern Poster Annual, 1931; a portfolio of 45 sheets, 10" x 13", upon which are mounted more than 100 designs in color; price $6.00; published by A. Broun, New York.

This portfolio, which is the seventh of the series to be published since Mr. Broun started it, presents a very well selected group of the year's best specimens of modern advertising designs in color. The designs are drawn from America and Europe and include work by many of the world's best known designers such as C. B. Falls, Boris Artzybasheff, Winold Reiss, Louis Fancher, Herbert Paus, John Sheridan, and others. Men interested in poster design and decorative commercial art will find this a useful collection.

History of the Campus Plan of the University of Illinois, 1867-1930, by Tilton and O'Donnell; 245 pages, 7" x 10½"; price $5.00; published by the University of Illinois Press, Urbana, Illinois.

Reviewed by Francis S. Swales

This interesting book, describing the process of planning the physical part of a great and rapidly growing institution, shows that a well conceived modern plan made twenty-five years ago, had it been carried out completely, would have been inadequate today.

"While we cannot hope that even the present excellent plan can be adhered to in every detail," writes President Kinley in the preface, "I am confident that the main outlines of the South Campus at any rate are fixed for years to come. Few institutions are so fortunate as to have had the benefit of so diverse an assemblage of talent and excellent advice from great architects and at the same time in the personnel of members of its staff a coordinating and unifying influence through a generation. The result is that the University has a workable campus plan, a correlated landscape plan, and a new architectural tradition."

The illustrations of plans and sketches representing the work of C. H. Blackall, who originated the idea, W. C. Zimmerman, J. M. White, whose endeavors kept it alive and in constant development, Holabird and Roche, Charles A. Platt, and others, the report of Mr. Vitale on the planting or "landscape," the collection of important letters,
and the reports of the Committees, all contribute to make this book an engaging study to architects and others interested in the larger phases of architectural planning of the proper relationship of groups of buildings in an effective and convenient arrangement. The plan of the University of Illinois is more than merely a plan of a group of buildings. It is the plan of a small city devoted to education.

Masterpieces of Architecture in the United States, by Edward W. Hoak and Willis Church, with a preface by Paul P. Cret; 225 pages, 13" x 17"; price $20.00; published by Charles Scribner's Sons, New York.

"In preparing this collection of executed work," says Paul Cret in his preface, "the authors of this book, Messrs. Hoak and Church, have shown a very clear understanding of its requirements, and both in the selection of their material and in their exposition of it have displayed a discrimination and intelligence that is worthy of very high praise." We can heartily endorse this statement of Mr. Cret's for it seems to us that the volume is one of the best architectural books of the year—an almost monumental record of some of the finest achievements of American architectural effort. The buildings represented are the Lincoln Memorial, Washington; the Liberty Memorial, Kansas City; the Detroit Institute of Arts; the Freer Museum, Washington; the Boston Public Library; the Indianapolis Public Library; the Detroit Public Library; the Church of St. Vincent Ferrer, New York; the Madison Square Presbyterian Church, New York; the Nebraska State Capitol; the Pan-American Union, Washington; the Temple of the Scottish Rite, Washington; the Shelton Hotel, New York; the Hotel Traymore, Atlantic City; the Barclay-Vesey Building, New York; the Bush Building, New York; the Tribune Tower, Chicago; and the Woolworth Building, New York. These were selected by a jury consisting of Chester Aldrich, Harvey Wiley Corbett, Ralph Adams Cram, Paul P. Cret, Raymond M. Hood, William M. Kendall, H. Van Buren Magonigle, William Rutherford Mead, Milton B. Medary, and Harry Sternfeld—truly a formidable list of judges.

Each structure is shown by means of beautifully reproduced photographs and fine analytical drawings which may be read directly to scale. An analysis of the problem and its solution by the architect of each building adds greatly to the value of the work as a reference. Both the authors and the publishers are to be complimented upon the production of such a finished piece of work.


Reviewed by Francis S. Swoles

This is an excellent treatise upon a subject which has long needed the thoughtful consideration and care which this author has given to it. It sets a standard of design in this controversial phase of structural engineering which will stimulate discussion and a better understanding of the essentials of the problem of securing against unpleasant elastic behavior of the steel frame of high, slender towers.

The author thinks clearly, is a sound reasoner, and expresses himself so well that his general description of essential features of the subject is as easily read and under-
FIRE HOUSE FOR DIXON FIRE DISTRICT, DIXON, CALIFORNIA—RENDERING IN PENCIL AND WATER COLOR BY HARRY LOCKLAND
DESIGNED BY HARRY LOCKLAND AND GEORGE J. ROSS
This department conducts four competitions each month. A prize of $10.00 is awarded in each class as follows: Class 1, sketches or drawings in any medium; Class 2, poetry; Class 3, cartoons; Class 4, miscellaneous items not coming under the above headings. Everyone is eligible to enter material in any of these four divisions. Good Wrinkle Section: a prize of $10.00 is awarded for any suggestion as to how work in the drafting room may be facilitated. No matter how simple the scheme, if you have found it of help in making your work easier, send it in. Competitions close the fifteenth of each month so that contributions for a forthcoming issue must be received by the twelfth of the month preceding the publication date in order to be eligible for that month's competitions. Material received after the closing date is entered in the following month's competition. The publishers reserve the right to publish any of the material, other than the prize winners, at any time, unless specifically requested not to do so by the contributor.

THE PRIZES this month have been awarded as follows:

Class I—G. Massena, Wilmington, Delaware.
Class II—Lila French, Minneapolis, Minn.
Class III—A. Caputo, Brooklyn, N. Y.
Class IV—No Award.

We have received a number of advance Christmas cards and are planning to present a group of different designs in the December issue as a belated inspiration to all "last minute artists." Of course we're going to have our annual Christmas Card Competition, too, but this will be announced later.

ALBERT N. TIPPLE of Rome, Georgia, sent us a story that amused us. He calls it "A Timely Hint":

"A friend of mine recently asked the owner of a cleverly designed and well built home who was his architect. 'Oh,' replied he, 'I designed the house, the architect only drew the plans.'"

Mr. Tipple suggests the desirability of a course for architects in crystal gazing, mental telepathy, or the fathoming of the subconscious. His idea is that if the architect were proficient in the technique of tapping the reservoirs of knowledge in the worthy client's mind he could more easily do the necessary jackass work for the client, and thereby in no way offend his superiority complexes.
FROM MR. PHILIP KUTZ, of Los Angeles, comes the following helpful hint:

"You can believe this or not but in my greatest hour of need at 7:30 in the morning when the world is rushing to get to work, my dainty feet refused to squeeze into my shoes, when lo and behold! my eye pounced on the cardboard edge protector which you include free of charge with each Pencil Points and with one application my feet just oozed into the shoes.

"I'll bet you never thought of those things being used as a shoe horn! From now on I'll never be without one."

THE ARCHITECT

By Lila French, Minneapolis, Minn.
(PRIZE—Class Two—October Competition)

A n Architect is a person who
R arely has anything to do
C atches ideas right out of the blue,—
H e charges plenty for them too;
I n most respects, and these aren't few,
T hose fees belong to his poor crew,
E arned by them,—his work they do—
C ollections made to them are due
T hough spent by him, who does nothing but stew,
Oh Yeah? ! ! Sez Who?

CASTLES

By Evantha Caldwell

It was a dreamer's castle,
A structure, fair and high,
And perfect stood though toil-made ones
All crumbled by and by.

Idea castles, fragile, fair,
More lasting are, men found,
Than those of brick and stone with deep
Foundations in the ground.
Today's breath-taking spires and spans of steel were "impossible" only a few brief years ago. Now walls of masonry are yielding to solid-section steel windows . . . new beauty comes in steel shapes and new skill devises their application . . . and on the horizon looms the amazing battle-deck floor.

Eventually, cities will be all steel. Not only the skyscrapers and great bridges, but the homes, schools, small apartment and mercantile houses, small factories and small bridges as well. For steel is the strongest, most versatile and fastest building material. Fabricated in mills, weather cannot delay its production—and rain, intense heat, or freezing does not impair its strength. It can be erected anywhere, at any time, as long as men can work—thus earlier returns on invested capital are insured, interest charges are saved.

In cities, too, there is constant change, growth. Small structures give way to larger ones—must be altered, added to or replaced. Steel facilitates alteration and addition—and no other building material has such high salvage value, is so economically recovered, or is so readily marketed afterward.

Before building anything find out what steel can do for you. The Institute serves as a clearing house for technical and economic information on structural steel, and offers full and free co-operation in the use of such data to architects, engineers and all others interested.

The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City. Canadian address: 710 Bank of Hamilton Bldg., Toronto, Ontario. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas, San Francisco and Toronto.
Steel Partitions by Snead.—A.I.A. File No. 28-a-3. New bulletin describing Snead type M all-steel and steel and glass partitions. Numerous interesting installations are illustrated. 8 pp. 8 ½ x 11. Snead Company, Pine St., Jersey City, N. J.

Northwestern Wall Blocks.—A.I.A. File No. 9-c. New document describes in detail this wall block adaptable for wainscoting and interior wall facing in power plants, water works, electric and telegraph plants, city halls, banks, schools, etc. Specifications, detail drawings. 8 pp. 8 ½ x 11. The Northwestern Terra Cotta Co., 2525 Cly-bourn Ave., Chicago, III.


Holland Vaporaire Heating.—A.I.A. File No. 30-b. Document prepared especially for architects on this type of heating system contains complete specifications, plans, sectional views, data, etc., for a standard Vaporaire installation. 16 pp. 8 ½ x 11. Holland Furnace Co., Vaporaire Division, Holland, Mich.

Herwig Exterior Lighting Fixtures.—Catalog No. 30 lists and illustrates more than 200 designs of cast iron and bronze lighting fixtures suitable for use on the exterior of apartment and public buildings, churches, schools, clubs, etc. Specifications, complete information covering the design and operation of this air humidifying and washing device for use in homes, offices, industrial buildings, etc. 8 pp. 8 ½ x 11. The Herwig Co., 1753 Sedgwick St., Chicago, Ill.

New Beauty and Utility in Plumbing Fixtures.—Attractive new publication covering a representative line of Kohler plumbing fixtures for bathrooms, kitchens and laundries, also electric dishwashers and clotheswashers. Numerous combinations of bathroom fixtures are illustrated and described in detail. Tables of sizes and prices. 36 pp. Kohler Co., Kohler, Wis.

The Aqualator.—A.I.A. File No. 30-f-l. New bulletin presents specifications and complete information covering the design, operation and installation of this air humidifying and washing device for use in homes, offices, industrial buildings, etc. 8 pp. 8 ½ x 11. The Aqualator Co., 17 Nevada St., Newark, N. J.

Waterproof Construction with Truscon Waterproofings and Dampproof Paints.—Valuable reference book for architects and specifiers and specification writers on the subject of waterproof construction, applicable to factories, office buildings, hotels, hospitals and dwellings, also swimming pools, elevator pits, tanks, etc. Specifications, detail drawings, estimating tables, directions, etc. Copies of this limited edition distributed to architects gratis. 100 pp. 6 x 9½ x 11 covers. The Truscon Laboratorins, 1637 Caniff St., Detroit, Mich.

The Facts About Sulabura.—A.I.A. File No. 28-c-2. New bulletin describing the structural, decorative and practical advantages of this washable, fadeless wall covering suitable for use in homes, hotels, clubs, residences, hospitals, etc. 8 pp. 8 ½ x 11. Frederic Blank & Co., 230 Park Ave., New York, N. Y.

The Brownell Ideal Home Stoker.—Bulletin ill 10 describes this type of automatic stoker for use in domestic installations with bituminous coal. 8 pp. 8 ½ x 10. The Brownell Co., Dayton, O.


Published by the same firm, "Pacific Steel Heating Boilers." A.I.A. File No. 30-c-1. Bulletin SC-30. Complete data on this type of heating boiler adaptable to mechanical firing with oil, gas or stokers for installation in all types of buildings. Color plates, tabular matter, blue prints. 16 pp. 8½ x 11.


Orange Aluminum Window Ventilators.—Illustrated folder setting forth the advantages of this new type of window ventilator. 4 pp. 8½ x 11. Orange Screen Co., Maplewood, N. J.
Architects turn to this new frame with locked sill-joint for better construction

To get greater building value, per every dollar invested, architects today are turning more and more to the new Andersen Master Frame with the new locked sill-joint construction.

Now they get real custom frame value at stock frame price—plus a big saving in labor costs—with Andersen Master Frames.

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Position Wanted: Architectural draftsman and designer wishes connections with western or out of town architect. Four years' practical experience. A partial list of architectural and drafting work: churches, schools, hospitals, banks and residences. Unemployed. Edward A. Shimer, 730 South 6th Street, Minneapolis, Minn.

Position Wanted: Architectural draftsman and designer, registered architect, 17 years' experience in New York City on all types of work including superintendence. Desires connections with commercial or architectural concerns in any location. Capable of making full plans, elevations and sections but will consider any location. Box No. 1101, care of PENCIL POINTS.

Position Wanted: Young man, 8 years' general architectural and construction experience, desires to make connection with a firm of architects or contractors as drafter. Has had 2 years' supervision on New York office building construction. Salary secondary to a position assuring advancement. Box No. 1104, care of PENCIL POINTS.

Position Wanted: Young architectural designer and draftsman, 8 years' experience on high class country residences, theatres, hospitals, office buildings, apartments, etc. Experience has involved designing and carrying work through to completion and superintending, figuring steel and rendering. Part time work preferred. Location Boston or vicinity. Box No. 1105, care of PENCIL POINTS.

Position Wanted: Young man, 24, High School graduate, desires position in architect's office. Five years' practical experience. Has supervised construction of buildings for the past two years. Salary secondary. Box No. 1106, care of PENCIL POINTS.

Position Wanted: Young man with architectural training and editorial experience desires position with architectural or allied trades magazine. Box No. 1108, care of PENCIL POINTS.

Position Wanted: Designer, one with extensive experience in offices of the East, doing work of a monumental, commercial and residential character. Graduate of C. I. T. Ability to do detailed work. Twelve years' experience. Age 35. Would prefer office which could use man of creative ability. No choice in location. Box No. 1110, care of PENCIL POINTS.

Position Wanted: Registered architect, college graduate, 15 years' experience covering all phases of the profession, and capable of taking complete charge of office work. Desires work in an office where he can develop his ability. Location New York, N. Y. Box No. 1117, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, college training, 5 years' practical experience in architect's office, desires connection with reputable firm of architects. Box No. 1108, care of PENCIL POINTS.

Position Wanted: Young man with architectural training and editorial experience desires position with architectural or allied trades magazine. Box No. 1108, care of PENCIL POINTS.

Position Wanted: Architectural draftsman in Kentucky with 10 years' experience. Two and one-half years' private practice. Capable of interviewing clients, preparing studies, sketching, rendering, drafting and superintending. Would like trial position at fair salary with prospect of permanent position if satisfactory. B.A.I.D. training. Age 28. Box No. 1120, care of PENCIL POINTS.

Position Wanted: Young man, 21 years old, desires position with architectural or construction company doing work in Russia. Ten years' European experience, ten years with McKim, Mead & White and other New York offices designing, rendering, specifications, and supervision. Has had 2 years' supervision on New York office building construction. Salary secondary to a position assuring advancement. Box No. 1104, care of PENCIL POINTS.

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Pictured here are four of the many patterns in which IMPERIAL Shingle Tiles now are available. They range from surprisingly inexpensive machine made tiles to somewhat higher priced hand treated ones. Wide variations as to color and surface texture make it possible to satisfy individual requirements of taste and design, no matter how particular. Write for folder which illustrates the entire line of IMPERIAL Shingle Tiles.
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This window is weather-proof when closed and draft-proof when opened. Both sides of all sashes can be washed from the interior.

It will not rattle, and can be operated with ease. The stationary bar between lower and middle sash makes it a safety window. Made in Bronze, Aluminum Alloy or Steel.

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Send for complete description, specifications and F.S. details.
Position Wanted: A young woman with 8 years' practical experience in architectural and interior design desires connection with architect or interior decorator. Graduate of the Art Institute of Chicago and the New York School of Interior Decoration. Would like position as associate with one of the oldest, most successful architects' firms in Detroit. References and capital required, for 49% interest. Box No. 1146, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, 10 years' all-round experience on various classes of work. Location immaterial for work over four months. References. Salary secondary. Box No. 1135, care of PENCIL POINTS.

Position Wanted: Young man, U. of P. graduate, two years' experience including all phases of architectural work as well as interior and metal design and familiar with modern detail, wants position. Will go anywhere. Box No. 1137, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, college graduate, 4 years' experience on churches, residences, apartments, hotels, banks and office buildings. Sketches, details, etc. One year as superintendent of construction in Europe. Desires permanent position in New York City. Box No. 1142, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, two years' experience as superintendent of construction in Europe. Desires responsible connection with reputable architectural firm where salary and advancement will be commensurate with initiative and ability. Broad experience in all phases of architectural practice. Thirty years of age and have a family. Box No. 1145, care of PENCIL POINTS.

Architects and Draftsmen: Opportunity for young man as associate with one of the oldest, successful architects' firms in Detroit. References and capital required, for 49% interest. Box No. 1146, care of PENCIL POINTS.
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WHO—BUT ALSO
HOW MUCH—AND THEN
WHY

Seek out not only where DURIRON is used, but how extensively, and with what history. No Duriron Drain Pipe in service for which we recommend it has ever failed because of corrosion. Calked joints stay tight. Experience among those named right here points to the basic economy of specifying "Duriron Throughout" as original equipment. Temporary plumbing is out of place in a building created for generations to come.

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Two Yeomans-Shone Duplex Pneumatic Sewage Ejectors, having a combined capacity of 1,000 g.p.m., handle the sewage and drainage requirements for the new Chicago Board of Trade Building, Chicago, Illinois.

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This photograph shows a drawing that has been thread edged by the Prakma process. It is practically impossible to tear the edge of this tracing.

This shows the condition of the average drawing after continued use.

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PRAKMA furnishes the only practical means of protecting valuable original drawings and tracings against destruction.

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starts up out of the huge tanks of molten “metal.”
You will have to see and examine a sheet of Pennvernon to realize how much this means. And it’s ready for your inspection at any of the Pittsburgh Glass Company’s warehouses—one in every
Mark well these outstanding and exclusive facts regarding the one and only sash fabricated of genuine wrought iron. Sash, for the first time, replete with special advantages of design overcoming all faults common to metal sash as previously known. Achieved through the employment of the remarkable structural possibilities presented by the Mesker cruciform rolled bar in a metal having as an historical characteristic exceptional resistance to the corrosive factors commonly present where extra heavy duty sash is required. An especially vital point—the pivot—is here done in white brass and malleable iron in cup style. Freedom from weaving—smooth, positive hinge action during the life of the building!
Western Electric’s Merchandise Offices...

heated by 21 Sturtevant Unit Heater-Ventilators

In the average unit heater-ventilator installation, heating is incidental to the primary ventilating function of the equipment. Consequently the advantages of using these units solely as recirculating heaters are often overlooked. These advantages are quick, uniform heating... close control of temperature... economy in operation.

A typical instance of efficient heating by recirculation is provided by the 21 Sturtevant Unit Heater-Ventilators in Western Electric’s Merchandise Building at Kearny, N.J.

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Sturtevant Unit Heater-Ventilators are adapted to infinite installations... schools, stores, hotels, institutions and other places. Have you Catalog 361?

B. F. STURTEVANT COMPANY
We think there is something at once challenging and inspiring about these pictures. You can't look at them for long without wanting to reach for a pencil and sketching paper. You feel an itch to try your hand at designing a floor or two of your own.

All right, go ahead. The only thing to remember is that there are no rules. No blue-laws. No inhibitions.

Because you are working in the world's most "workable" floor material. A sharp linoleum knife in the hands of a skilled mechanic can make Sealex Linoleum or Sealex Treadlite Tile as-

(Continued on following page)
sume almost any two-dimensional form your mind can conceive.

So reach for that pencil and paper. The sky's the limit. Plan a modernistic floor for a smart shop. An office floor with the firm's trade-mark as part of the design. A formal "period floor" for a public building. A living room floor with the owner's hobby symbolized in the floor design.

And when the time comes to carry out your conceptions, call in an Authorized Contractor of Bonded Floors. Those firms, as you can see by these pictures, have had specialized experience in this type of work. And their standards of workmanship are so high that we are able to back their floors with Guaranty Bonds against repair expense!

CONCOLEUM-NAIRN INC., General Office: KEARNY, N.J.

BONDED FLOORS

Floor design reflecting the character of a business, Reception room of Radio Station WAAM, Newark, N.J. Letters WAAM were cut from Selex Linoleum and inset into the floor.

An unusual type of game-board and floor combined, illustrating the versatility of Selex flooring materials from a design standpoint.

If, rather than prepare floor designs in your own office, you wish suggestions submitted to you, an Authorized Contractor of Bonded Floors will place his and our services at your disposal. Call upon us for estimates, specifications, samples or designs. No obligation, of course . . . . .
The elevators in this sixty-story bank and office building are equipped to travel at the high speed of 1200 feet a minute. The Elevator Entrances, by Dahlstrom, all electrically operated, provide the precision required to harmonize with this high speed.
DESIGN STANDARDS FOR OXWELDED PIPING

Any welded piping system, even in its most complicated form, is a combination of a few fundamental welding design details.

SWAGES OR REDUCERS

Explanation of Design:
Formation or fabrication, both concentric and eccentric, to meet any condition, may be formed as illustrated on pages 31, "Design Standards for Oxwelded Piping."

Uses:
Swages or reducers, either formed or fabricated, are recommended for all sizes, pressures and services for replacing cast swages.

Specification:
When welded swages or reducers are specified, the following features should be included in the specification:
1. Templets shall be used for making cuts.
2. Cuts shall be carefully beveled and accurately matched in order to form a good vee for welding.
3. Welds shall be built up to present a gradual increase in thickness from the edge to the center.
4. Thickness at the center of the weld shall not be less than \( \frac{1}{4} \) times the pipe wall thickness.
5. The weld shall be of sound metal free from laps, gas pockets, slag inclusions or other defects.

The above is excerpted from a handbook on fundamental designs, titled, "Design Standards for Oxwelded Steel and Wrought Iron Piping," published by The Linde Air Products Company. A copy of this handbook should be in every architectural drafting room. It is yours for the asking. Just fill in and mail the coupon.

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Because of minimized radiation surfaces, radiation losses from a welded pipe line, whether covered or not, are less than from a screwed or flanged line.

In addition to this, oxwelded construction permits more efficient insulation and consequent higher operating efficiency. It enables continuity of insulation, impossible where other means of pipe jointing are used. There is also the further advantage that the insulation, once applied, will not be ruined through leakage and will not have to be removed at the joints for tightening gaskets or repairing leaks.

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Pondosa affords real protection against the extremes of warmth and cold

"I've always claimed that people an' wood have lots in common. Take this piece of Pondosa. Smooth, straight and well seasoned. Lot o' folks like that. That's what I like about this lumber—it wears well—and improves on acquaintance."

—from the philosophy of the boss-carpenter

Whether the sun is blazing down, or wintry winds storm outside, the home walled with Pondosa Pine stands safely protected. Pondosa Pine is a low density wood, a natural insulator. Pine siding, pine sheathing, and pine lath... these three layers... with their countless air spaces interspersed within the rigid fibrous structure of the wood... serve to retard greatly the passage of heat or cold, and to set up an effective insulating barrier.

In addition to its high insulating qualities, Pondosa is both beautiful and weather resistant. The paint brush goes smoothly over the surface and with fewer coats leaves a lustrous finish free from ripples. That soft and even color will be in evidence for years. And during that time, joints will be tight, cupboard doors work smoothly, and the baseboard cling snugly to the floor. Pondosa builds for permanence.

In short, this light, strong Pondosa is ideal for almost any softwood purpose, inside or outside. Specify Pondosa by the mark of the pine tree, imprinted on the lumber. Most good lumber yards can supply large amounts of Pondosa quickly. Western Pine Manufacturers Association, Portland, Oregon.

Pondosa Pine
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YEARS ago we started using a combination metal and cypress roof bar for supporting the glass in greenhouses and conservatories. For the last three years we have been perfecting it from a structural side, while at the same time making possible many refinements to the framing, giving an added lightness and attractiveness.

Now that the series of tests have abundantly proven the superiority of the bar, we are seeking a suitable name. One that will mean something structurally to architects, while at the same time be short and easy for others to remember.

For such a name we offer outright, 250 dollars. All architects and any draftsmen now in employ of an architect are eligible.

Write at once for full particulars. Offer expires December first. Award made December tenth, in ample time for Christmas use.
Superior quality at a reasonable price . . . . . .

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Complete details on request.

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APOLLO-KEYSTONE grade embodies all the high qualities of the Apollo brand, together with a KEYSTONE Copper Steel alloy base, which gives added resistance to rust and corrosion, and insures the maximum degree of satisfactory wear and permanence. This Company manufactures Black and Galvanized Sheets, Automobile Sheets, Special Sheets, Tin and Terne Plates, for all known uses.
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SECTIONFOLD PARTITIONS
(Reg. U. S. Pat. Off.)

Fold Up
The Walls
.... Change Size and
Number of Rooms at Will

The large room, banquet hall, gymnasium or class rooms may be quickly and easily subdivided with Wilson Sectionfold Partitions. Adapted for old buildings as well as new ones. We are pioneer manufacturers of folding and rolling partitions and our fifty years experience, plus many exclusive patented features enable us to offer the utmost in durability, appearance and trouble-free factors.

Write for Catalog No. 4

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Woodwork and hardware all products of our factory and of best quality obtainable.

Five year guarantee with every installation.

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SEND FOR BOOKLET
APARTMENTS
equipped this way
rent faster—stay rented

Tenants can plug in their radio sets the minute they move in without bothering about antennae, ground connections or lead-ins. Radio reception better than with individual aerials.

RCA Centralized Radio equipment makes any apartment building more attractive. It assures each tenant far better radio reception than was ever before possible. Buildings offering this amazingly simple solution rent faster—stay rented!

A single wire antenna system perfected by RCA, replacing the unsightly maze of wires on the roof, amply serves every apartment. No wonder prominent architects everywhere are including the new RCA Centralized Radio system in their plans.

This system can be installed in new or old buildings of any size, regardless of the number of apartments or individual radio outlets.

Being RCA equipment, of course it is approved by the National Board of Fire Underwriters.

For Hotels, Hospitals, Schools... RCA Centralized Radio Equipment is also designed for hotels, hospitals, sanitariums, schools, passenger ships, etc., where transient occupants of rooms may enjoy radio programs or phonograph record entertainment from loudspeakers or headsets, all operated from a central control.

Without obligation, we will answer inquiries and prepare plans and estimates for installations of any size.

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Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. V. Montgomery, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Corporation publishing PENCIL POINTS and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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Publisher. The Pencil Points Press, Inc., 419 Fourth Avenue, New York City.

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CLASSES. Later announcement will be made describing the day and evening classes in Art (including Illustration and Advertising Design), Architecture and Interior Decoration. Of particular interest to architects and draftsmen at the moment are two evening classes opening in November; one a class in ARCHITECTURAL RENDERING under the personal instruction of Mr. Guptill, and the other "THE SATURDAY NIGHT SKETCH CLUB" with Mr. Watson in charge.

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Just how this club will be organized Mr. Watson prefers not to decide without the advice of the members. He invites all who may be interested to meet at the club rooms in the school on some Saturday night in the near future. Please write to him at once and he will send you further information.

OTHER ARCHITECTURAL CLASSES. If there is sufficient demand, additional evening classes will be organized at an early date in such subjects as Elementary and Advanced Architectural Drafting, Architectural Elements, The Orders, Shades and Shadows, Estimating, Specification Writing, etc. Suggestions for classes are invited. Day classes in all subjects will be formed about the first of the year.

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A new medicine cabinet, the Electro-Kabinet, equipped with bathroom lighting fixtures, electrical receptacle, towel shelf and water bottle heater has been developed for hotels and remodeling work. It has been placed on the market by the Welded Products Corporation, Kansas City, Mo. The Electro-Kabinet is one of the first models are constructed with set of artistic built-in fixtures, placed to cast the best light reflection on the French plate glass mirror. A conventional service is offered by the receptacle plug in the Electro-Kabinet. The cabinet may attached curling iron, heater, fan or other appliance. The two light fixtures, receptacle plug, and switch are all operated by one electrical outlet box. In addition, these models are equipped with ample towel shelf space. Rods form water, soap hooks at either side, while a razor blade safety holder provides a modern, safe method of disposal. Where access to such a device is desired, the Electro-Kabinet is hinged to metal back.

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